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GENERAL INFORMATION

The Editor-in-Chief is Dr. Kelvin D. Lynch, Mills Building, El Paso, Texas. Original papers submitted for publication should be sent to him. Books for review should be sent to him, also.

The Managing Editor is Dr. Warner Watkins, Box 1328, Phoenix, Arizona. All communications relative to advertising, reprints, and business affairs of the Journal should be addressed to him. All matters pertaining to subscriptions, complaints, mailing lists, exchanges, etc., should be sent to him.

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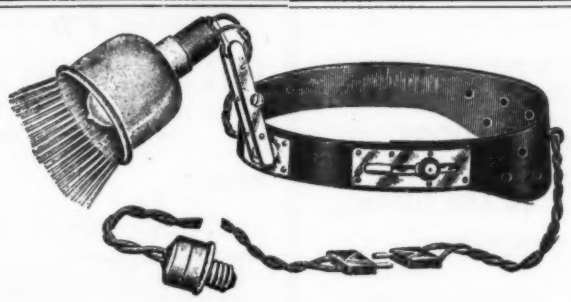

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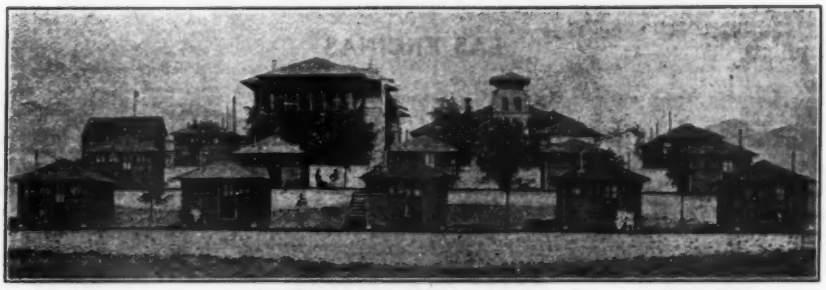

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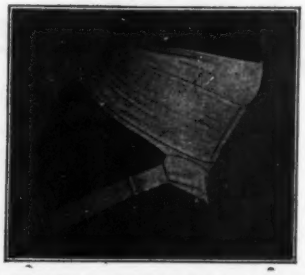

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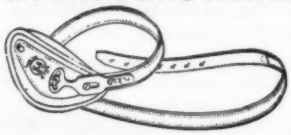

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MEDICAL & SURGICAL ASSOCIATION OF THE SOUTHWEST

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THE RELATION OF CHEMICAL RESEARCH TO MEDICINE*

DR. H. A. MILLER, Clovis, N. M.

Chemistry is the fundamental science of the transformation of matter; this science is searching, seeking and classifying the ultimate construction of matter. Physics deals with the transformation of energy, the molecule in which the identity of matter is retained, but chemistry delves deeper and separates the molecule into its component atoms and, further, finds the arrangement of these atoms in the molecule.

During the recent war, when it became clear that poison gas was to constitute a powerful offense and defense, research chemists of America were called upon to solve problems of production and effectiveness which would give our forces an ample supply. These men, instead of working singly in isolated laboratories, were assembled at the American University Experiment Station, in Washington, where they could be in close conference. They were aided or supplemented by a group of pharmacologists and pathologists, who worked in close association with these chemists. Through the efforts of this group, we all know how rapidly this phase of warfare was solved and America, at the cessation of hostilities, had probably progressed far beyond any of the other countries in production and effectiveness of this weapon.

From this success in making war future medicine should learn a lesson in battling against disease. Could not the same co-operative and associated methods used so successfully in solving problems of war, be used likewise to solve problems of peace? While war claims many victims, disease claims more. Victims of cancer, tuberculosis, pneumonia, influenza and the crippled from epilepsy, insanity, malnutrition, abnormal development and many other diseases, still continue. These ravages of disease keep on, despite the fact that almost daily we are refining our technic in diagnostic and laboratory methods. That our present armamentarium of treatment is still inadequate is attested by the fact that the drug bill of this country annually is about five hundred million dollars of which amount about three hundred million dollars is spent for so-called "patent medicines." Many new medicaments are being offered for treatment, without due research being made as to their worth. Drug items on the market are legion and many cults of healing have sprung up. Thus the frailties and suffering of humanity are being exploited.

Centuries ago, the physician and the chemist worked together for the alleviation of suffering, the chief aim of the chemist being the furnishing of medicines for the use of physicians. They separated, however, due perhaps to the fact that the physician could not collect sufficient fees to remunerate his co-

*Address of the President, Fortieth Annual Session of the New Mexico Medical Society, at Gallup, April 28th and 29th, 1922.

worker; the physician turned to other means to obtain his ends, and the chemist turned to the industries. Later, the physician turned back to his former aid and found substances which he made use of, such as ether, which was discovered in the thirteenth century, but not recognized as an anesthetic until 1846. The same is true of magnesium sulfate, and twenty-three years elapsed between the discovery of amyl nitrite by the chemist and the discovery of its medicinal properties by the physician. Thus many patients suffering from angina pectoris went without relief because of a lack of co-operation between chemist, pharmacologist and physician.

There has been a re-establishment of the recognition of the relation between chemistry and medicine. Each human body is now recognized as a chemical factory, in which complicated chemical and physical changes are taking place. When these are normal, good health results; when abnormal, disease results. Moreover, when natural resistance is lowered, resulting in infection by invading organisms, these organisms produce disease and death by chemical agencies (toxins), which act upon the heart, respiratory centers, or gradually poison the entire system.

The bacteriologist and pathologist have accomplished much in working out the causation of diseases, but they have now reached the point where they must turn to the chemist for the solution of many of their most important problems. To illustrate, antitoxins, most potent in combatting disease, are chemical substances of specific power but unknown composition. They are injected in the form of crude mixtures, laden with undesirable and sometimes harmful ingredients. The isolation of pure concentrated chemical principles would give us a definite exact dosage and swift action. As an example, rickets is a disease which bids fair to succumb to chemical investigation.

In the matter of foods, we now realize that, without vitamine content, they are analagous to Budweiser after the eighteenth amendment, but the chemistry of these essential food substances is still unknown.

Even the chemistry of the living cell is still little known and, since we live solely through the co-ordinated activities of differentiated cells for special functions, how can we have much knowledge of the body as a whole, when so little of the life unit is known?

The study of cell secretion, alkaline reserve, colloids and enzymes offer many chemical problems still unsolved, as also diseases of nutrition, pellagra, rickets and cardiovascular-renal disease.

In view of the vast chemico-medical problems to be solved, much has already been accomplished; salvarsan has shown us that there can be a specific chemical remedy for a specific disease; that is, a chemical remedy which destroys the invading organism without injury to the host, when used by proper technic. This was brought to a successful issue by close co-operation between chemistry and medicine, and we have further promises of specific chemical remedies for specific diseases, independent of any compounds that nature has supplied.

All this brings up the point of the existing facilities for chemico-medical research. In our country, we have a number of foundations and institutions for medical research doing much valuable work from a chemical viewpoint. Few lines of chemical investigation in relation to disease have been developed here. We have been dependent on foreign countries, especially Germany, for the application of chemistry to disease problems.

It would, therefore, seem that we have built a wonderful superstructure in medicine, but as yet do not understand the fundamental chemistry of the fine and sensitive powers of adjustment of living organisms. We have gone a long ways through the earnest efforts of isolated and individual workers, but it would seem that we can best hasten the ultimate success by bringing together, for closest co-operative work, expert worders, in a well organized group, so their research work would be co-ordinated. By this method, a more determined attack could be se-

PRELIMINARY PROGRAM, ANNUAL MEETING, ARIZONA STATE MEDICAL ASSOCIATION.

To Be Held at Prescott, Arizona, June 14th and 145th.

Presidential Address, by A. L. Gustetter, M. D., President Arizona State Medical Association, Nogales, Arizona.

Message from Honorable Thomas E. Campbell, Governor of Arizona.

ADDRESS IN MEDICINE, "Tuberculoma of the Brain," by Walter D. Sheldon, M. D., Rochester, Minnesota.

PAPERS

1—"The Early Diagnosis vs. Positive Diagnosis in Tuberculosis," by W. O. Sweek, M. D., Phoenix, Ariona.

2—"Abscess in the Lung," by Meade Clyne, M. D., Tucson, Arizona.

3—"Thoracoplasty," by Willard Smith, M. D., Phoenix, Arizona.

4—"Gland Therapy in Tuberculosis," by F. H. Redewill, M. D., Phoenix, Arizona.

5—(Title not given), by Donald J. Frick, M. D., Los Angeles, California.

6—"Kidney Function," by Charles S. Vivian, M. D., Phoenix, Arizona.

7—"Henoch's Purpura, Report of a Case," by James R. Moore, M. D., Clemenceau, Arizona.

8—"Development and Maintenance of Breast Milk," by E. M. Tarr, M. D., Phoenix, Arizona.

9.—"Mental Hygiene in Arizona," by Thos. H. Haines, M. D., Phoenix, Arizona.

10—"X-Ray Therapy of the Tonsils and Its Limitations," by Will Wilkinson, M. D., Phoenix, Ariozna.

ADDRESS IN SURGERY, "History of the Diseases of the Thyroid and the Development of Surgical Treatment," by Clarence Moore, M. D., Los Angeles, California.

11—"Infantile Spastic Paralysis," by R. D. Kennedy, M. D., Globe, Arizona.

12—"Some Experiences in Surgery of the Prostate," by Herbert Augustus Rosenkranz, M. D., Los Angeles, California.

13—"Roentgen Findings in the Common Bone Lesions, by James Thom, M. D., Jerome, Arizona.

14—"Osteomyelitis, with Report of a Case," by J. B. Nelson, M. D., Mesa, Arizona.

15—Medico-legal Problems in Arizona," by LeRoy Anderson, Esq., Prescott, Arizona.

16—"Sacral Anesthesia," by A. J. Murrieta, M. D., Los Angeles, California.

17—"Anesthesia — and the Anesthetist," by H. R. Carson, M. D., Phoenix, Arizona.

18—"The Relation of Nasal and Accessory Sinus Disease to Asthma," by J. J. McLoone, M. D., Phoenix, Arizona.

19—"Food Addition Method in Asthma," by O. H. Brown, M. D., Phoenix, Arizona.

20—"Value of Blood Chemistry to the Practitioner," by P. B. Newcomb, M. D., Tucson, Arizona.

21—"The Fallibility of Clinical Laboratory Methods," by W. Warner Watkins, M. D., Phoenix, Arizona.

22—"Diagnosis of Endocrine Dystrophies," by Nelson W. Janney, M. D., Los Angeles, California.

cured on the conservation of health and cure of disease. The co-operative efforts of specialists in the individual sciences of organic and physical chemistry, biology, pathology, bacteriology and pharmacology, would make this issue more rapid and certain.

Such a procedure should be fostered by every man of medicine and through such a procedure we may prophesy that medicine might be raised from the level of an art to that of an exact science.

WHY?*

DR. WILLARD SMITH, Phoenix, Arizona.

When death took from us our beloved Mother Paul, we lost more than we have have yet had time to realize. This institution is peculiarly the embodiment of her hopes and ambitions and work. It was she who, through all the pioneer years, labored to make real the dream of useful service which was the guiding principle of her life. I have no doubt that others have shared with me the thought that her decisions were sometimes wrong. I know that I have often rebelled at heart when her opinions were not as I thought they should have been. But as time passed I have almost always found that her judgment has proved to be right. What seemed at the moment to be a just cause for criticism has usually turned out to be only another instance of her foresight and good judgment. This happened so often that I got into the habit of thinking that if she passed judgment on anything, even if I did not agree with her, it was pretty sure to come out as she predicted. She had the gift of farsighted judgment. She was a builder. Her opinions were not based on the immediate benefit, but on the ultimate result. The impression she made on this hospital has only begun to be realized. As the years go on I am sure that we will see more and more the fruits of her planning.

She was the pioneer. She was the inceptive spirit of the organization, and as executive head was a powerful factor in making dreams come true. She was taken from us just as we are about to garner the fruits of her long years of careful planning and hard work. But she was not alone in the work. Associated with her was a noble band of devoted women. Some of them have already been called to their reward, but we are still granted the presence and labors of those other Sisters who have worked as hard, each in her own capacity. The time of doubt and uncertainty, through which her unfaltering faith and perseverance was the guiding star, has passed, and she has left us a hospital which it is our duty to try to build up to the standard which she set. There is no doubt of the success of the venture now. Her work has made that certain. There is no doubt of the good faith and honest intentions of the Sisters, and of their willingness to carry on. That is self-evident. But it is not enough. We members of the Staff have our duty to perrorm as well. It is all very well to fully realize that this is the Sister's Hospital. But it is also our hospital. We will do well to absorb and emulate the same spirit which has actuated the Sisters. We must not sit idly by and expect that we are only to reap the benefits and do none of the work.

Before refinement is possible it is necessary to accumulate material. The

*An essay before the annual meeting of the Staff of St. Joseph's Hospital, Phoenix, Ariz.

Sisters have built from a very small beginning until there has resulted an institution which is large enough to be a trifle unwieldy. Mother Paul saw this and also saw that it must be better systematized in order that it might fulfill its destiny. The plant was accumulated and used and has done great good, but much effort was wasted because of lack of co-operation. The Sisters have always been competent to attend to the business side of the organization. But times have changed since the founding of even so modern an institution as this. Science has advanced and progress in hospital work has been so rapid that no one person could succussfully keep pace with it. No hospital has the right to be anything less than the best. The product of a hospital is service. It is not doing its bit unless it is turning out a first-class product. This requires not only a competent business management, and an adequate equipment, but also the co-operation of the doctors and nurses and the co-ordination of the efforts of all. It was with the object of securing this in the greatest possible degree that Mother Paul was so keenly alive to the necessity of a well organized and efficient staff.

So the Staff was formed. It was made an open Staff so that all would be given an equal opportunity for service. Behind that was the greater purpose to subordinate the element of personal gain and to enlist all in a common cause of advancement. As in all new places, and old ones as well, the element of human selfishness has not been entirely absent. Those of us who have been here for some time can look back over the mutations of the rings and combinations which are a nightmare to one who has any belief in the justice of the Sherman law. I presume that so long as the race endures we will have those dominant spirits who will not hesitate to secure personal ascendency by whatever means lies ready to hand. But, as I read history, these petty personal advantages are not what has ever built up anything which has endured. Selfishness atways defeats itself. Waves beat on the shore but only the tide raises the water level. It is futile to hope that homo sapiens has yet progressed to that point at which altruism is a dominant motive. We must accept the fact that the game is played as it is played, and make the most of it. We must accept the fact that most men measure their contacts with the world in terms of personal gain. To believe anything else is to chase moonbeams.

I presume that some of you are wondering what I am driving at. It is just this. I am trying to make an appeal to you to do that which is for your own personal gain and advantage. It is a well known fact that the steam which goes through the whistle cannot serve to drive the engine. Each of us has just so much steam to put into the effort which we are ostensibly making to make this a first class hospital. If we waste our energies in other than constructive things, we have that much less energy to apply to real building. There is no greater waste than useless argument and futile discussion, particularly about those things which do not concern us. And that brings me to the subject of this paper—Why?

One year ago this staff was formed. The object of this Staff was not to build or run a hospital. The hospital was built and was being run. The methods were faulty, of course. The faults of a commercial nature were none of our business. That side of the problem is the Sisters' business. If they choose to ask advice that is for them to do. If we have complaints it is our business to state them to the business office, just as we would do in any other business. We are not employed to run the finances of our patients. We are employed to restore them to health, if we can. Our ability to do this will not be enhanced by our meddling with a host of things which are foreign to our function. By spreading our attention over a variety of things we are bound to spread our attention very thinly over all. That is the secret of co-operation. Each fellow can do best his own part and can accomplish most just in proportion as he refrains from meddling with things that are none of

his business. I have noticed that a jack-knife which is screwdriver and a corkscrew and a chisel and a file and a scissors and a dozen other things is not usually much of a jack-knife. Our business is to be doctors. The great Leonardo was able to be a dozen things well, but we have few Leonardos among us. It seems scarcely necessary for me to quote the old saw about the jack of all trades.

The Staff was formed for a definite purpose. It was to plan and put into practice a methodical manner of handling the professional work of the hospital. It was to put into use a method of recording the work done in the hospital. It was to seek to curb some unprofessional practices. It was to provide a supervising board whose duty it was to analyze the professional work of the hospital and to call attention in a constructive and helpful way to errors and to invite constructive criticism. It was to have summaries of the hospital's work placed before it and to seek remedies for the weak spots in the work. It was, in short, to seek to make better doctors of us all and to raise the average quality of the dork done in the hospital.

Let us see how well we have done this in the first year. It is only by knowing and acknowledging our shortcomings that we may hope to improve. I have not expected that the Staff would function well at first, and it has not belied my expectations. A start has been made, and if we have the saving grace of common sense we can make it worth while in time. So far it certainly has not made much of a record.

We have a lot of blanks which are good for a starter, but have the fault that they contain a wilderness of repetition. Any of you who have taken the trouble to really fill out the blanks will agree with me that they rival the income tax blanks. Patients cannot be standardized. He who would reduce all patients to certain cut and dried forms must worship the forms and disregard the patients. My personal method is to disregard the set forms and write the essential history and findings and let it go at that. "If this be treason, make the most of it."

When the Staff was formed, two well known abortionists were pointedly omitted from the invitations. One of them has since operated in the hospital and the other one was major domo on the occasion of our most spectacular and best attended meeting.

The only analysis which I have heard of the work of the hospital was a very fragmentary report by the Superintendent, the juice of which was the statement that there had been only one operative infection in a number of cases. This made us wonder if it would bear investigation. Statistics are wonderful things when one makes them to suit. There is a Staff committee which should investigate and pass on all such reports at least once a month and which should seek the wrong things and suggest methods of correction, rather than the opposite. One of the most touching obituaries I ever read was written about a saloon keeper. It is surprising how many good things we can say about a fellow if we censor the report.

We have spent whole valuable evenings in random discussion about things which are none of our business and we have had a few papers which were carefully culled from textbooks. We meet only once a month, and there is some uncertainty as to how many months each of us may be here on earth to meet. All of this has given rise in my mind to the query as to why we meet. We are certainly not doing our work as a Staff.

Few organizations function properly from the start. This is no exception. A year's time should be enough for us to find the errors, or at least the more glaring ones. May I suggest that we start the new year with the intention of limiting our work to the proper function of a staff, and that we proceed to produce some of the results for which the organization was formed.

ACUTE INTESTINAL INTOXICATIONS IN INFANCY AND EARLY CHILDHOOD

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This subject is presented for your consideration because a very large number of these cases have come under our observation during recent years. Since these acute intestinal intoxications are very destructive to life, or, at least, seriously interfere with the essential nutrition of the young, the subject is of much importance to the general practitioner as well as to the pediatrician. The sudden and violent symptomatology with an early fatal termination leaves us stunned by the speed of the morbid process and chagrined at our inability to treat many of these cases successfully. Of a large number of names applied to this condition, the one of choice, which seems both applicable and descriptive, is "Acute Intestinal Intoxication."

In ths cuntry, Benjamin Rush was the first to describe Acute Gastro-Intestinal Intoxication. He observed the effect of seasonal and temperature changes in what was then known as "Cholera Infantum." Rush also began seriously to consider the possibility of the patient-to-patient route as a means of spreading the disease when diarrhea and digestive disturbances were epidemic. To Rush belongs the recognition of the possibility of spoiled milk in the summer months as a source of the severe intestinal conditions, antedating much of the modern conception of these severe intestinal disorders The modern conception of these severe bowel disturbances dates to the work of Czerny, Finkelstein and Meyer, yet a host of others have done much to refute, or add to, our present knowledge of the intoxications. The American clinicians and students are now contributing some of the most creditable work to the difficult subject of intoxications, which has been sidestepped so long, as one of the most trying problems in medicine.

Many sections of the country have conditions which are particularly favorable to some one disease or another. In the Southwest we wish to emphasize the semi-arid climate with its fluctuations. These conditions are favorable to severe bowel disorders when the variations of temperature are greatest. Accordingly, April and May, September and October are accompanied by the largest number of intoxications. Possibly other factors are important, as the overheated homes which cool slowly so that children when covered sufficiently for the chill of early morning become restless and throw off their night coverings. Thus the debilitated child, following a period of mild dyspepsia, or the chronic feeder, is especially apt to suffer, when subjected to sudden, or severe chilling. Many of the etiologic factors which predispose and excite acute intoxications are fairly well known. However, to know the exact role played by each of these is difficult, since there are so many deleterious agencies that may be present. The exact status of an infection superimposed upon a food injury, or vice versa, makes a clear-cut etiology. The element of cause and effect must also be borne in mind. We must think of constitutional disorders, an unstable nervous system, poor hygiene, parenteral infections, removal of the young too early from the breast, spoiled food, qualitative and quantitative errors of feeding, and especially the age incidence which shows that the period of life between six months and two years is the most susceptible time for acute bowel disorders.

SYMPTOMATOLOGY

The severe intoxications begin as ordinary gastro-enteritis, and, if seen early, the severe nature of the disease is not suspected; yet usually in 12 to 24 hours the disease assumes its typical characteristics. The vomiting is fre-

*Read before the joint meeting of the Medical & Surgical Association of the Southwest and the Pacific Coast Roentgen Ray Society at Phoenix, Ariz., December 1-3, 1921.

quent and often projectile in type and if the baby is old enough it begs constantly for water. The child grabs the cup and literally throws the water down, and as the last drops are drained the child clings desperately to the side of the container. The water is hardly down before it is vomited, with scarcely time intervening for the fluid to become warm. This intense thirst is almost pathognomonic of the disease. The stools are frequent and, at first, contain very sour, offensive fecal matter, which is brownish in color. Later the number of bowel movements increase and the type changes to a serous and finally, to a characteristic rice-water stool, that may occur as often as 10 to 20 evacuations an hour. The abdomen is flaccid and sunken, but distention and cessation of diarrhea are noticed towards death. The child, from the onset, is very restless and throws itself about the crib. This symptom quickly changes to a profound prostration and to an intoxication which is marked. The skin takes on an ashen color and is cold to touch in spite of an extremely high temperature. The features are pinched, the eyes appear sunken in bluish orbital depressions and the conjunctive appear dry and glazed. Radiating episcleral vessels become sharply defined as deep red lines which extend from the palpebral borders centrally; these lines, we have observed, if they increase in diameter and number, forebode death. The early initial temperature may be followed by a rapid rise to the unusual height of 106 to 108 F. The early period of restlessness is succeeded by a shocklike appearance and a complete collapse; the child is profoundly toxic and the prostration is marked. The excitement gives way to a dull, heavy and listless mental state. The breathing, at first deep, rapid and labored, fails and appears irregular as it assumes the Cheyne-Stokes type. The early rapid bounding pulse becomes weak, intermittent and finally imperceptible. A high terminal temperature develops, the vomiting and diarrhea stop, the respiration and pulse fail as the end approaches. Death usually comes as the climax of a violent convulsion. This is a sad picture, indeed, and once seen it is not easily forgotten.

COURSE

The course of the acute intoxications, as described above, is either rapidly fatal, or a form somewhat modified in severity, yet ending fatally after three or four days, or the type which terminates as a severe acute enterocolitis. The latter variety resembles much the convalescence of typhoid fever. Variations in the symptomatology are seen, but it is quite the exception to see a case devoid of vomiting or diarrhea, although such types are occasionally found. Occasionally a case detoxicates without the long convalescence seen in most recoveries. At all events, it must be considered an extremely dangerous disease.

PATHLOGICAL CONSIDERATIONS

Pathological investigations have, at least, opened a route for an attack on the acute intestinal intoxications along physiological and pharmaceutical lines. In the absence of elucidating post-mortem findings, some of the outstanding facts placed at our disposal give us, at least, an insight into some of the factors involved.

1. Severe chililng may stimulate the sympathetic nervous system with a resulting hyperperistalsis and an unusual activity of the biliary tract. Coincident with a biliary discharge into an already irritable and empty gut, the bile acts as a powerful cathartic; or if in the presence of an infection, or of a food injury, the effect of such stimulation may result disastrously to the baby.

2. So called Acidosis in acute intoxications is not due to acetonemia, as is usually supposed, but to a high concentration of the acid phosphates in the blood stream. Hence the usual ineffectual administration of bicarbonate of soda in these cases, except for the small amount of true acidosis which is often present. When the osmotic pressure of the crystalloids in the blood stream exceed the osmotic pressure in the renal glomeruli, the kidneys fail to excrete many of the injurious metabolic products. Clinically and chemically there is a true uremic acidosis. This fact is

borne out clinically by the respiratory rate, the irritation to the central nervous system, as well as chemically by blood analysis. Anhydremia consequently increases the symptoms of acidosis and uremia.

3. That a functional intolerance of the gastro-intestinal tract may develop during dehydrated conditions is an experimental and a clinical fact. Administration of food or fluids acts as the exciting cause of the vicious vomiting cycle that develops after feeding at these times. The more food given the lower the tolerance becomes and the more persistent the vomiting. Thus the rationale of the early withdrawal of all food and fluids by mouth if vomiting is present.

4. The presence of unutilizable crystalloids in the blood, whether absorbed from the tissues as a result of increased metabolism, or from the bowel, carry with them in excretion a large amount of water. It is obviously necessary to withhold food and hypertonic solutions to avoid the danger of further depletion of the body fluids.

5. Although disputed, Finkelstein's view that there is an increased permeability of the gut during an intoxication seems to us clinically important. Whether it is the absorption of crystalloids with a further upset of the water balance, or the diffusion of unsplit proteids in the blood stream, the toxic manifestations rapidly become aggravated after feeding.

6. As an intoxication progresses, and as the body fluids are drained away, the blood shows an increased specific gravity, a high index of refraction, an increased viscosity and an increased electrical conductivity. There is a tremendously increased urea and non-protein nitrogen content with a high Ambard coefficient; a high equivalent of corpuscles in the ash residue, and a tremendous increase in the osmotic pressure. Examination of the venous and capillary blood shows enormous discrepancies in the count, thus indicating an engorgement of the blood cells on the arterial side of the capillary circulation.

7. The shocklike appearance of the child is not true shock. The stagnation of the cellular elements of the blood in the precapillary spaces gives the peculiar ashen pallor to the skin. The cold surface is the result of a decreased circulation, due both to the precapillary accumulation of blood cells and a peripheral vaso-constriction which apparently attempts to compensate for the diminished volume present as a result of fluid losses.

8. The urine analysis consistently shows a negative balance in water, in nitrogen and in salts. This may be explained by the utilization of the body tissues during the tremendous increase of metabolism and a retention of solid elements during kidney failure with the resulting loss of water by bowel, vomittus and the lungs.

9. The recovery of a child from an intoxication is directly in proportion to the approach to the normal protein concentration of the blood. As the blood stream is diluted and the tissues are replenished with fluids, the normal nutrition is again resumed and a proper water balance is established. A considerable period follows after the blood reaches a normal concentration before the baby begins to gain.

10. Powerful and continuous purging, which is so frequently resorted to, cannot be expected to aid in bringing about a favorable prognosis. On the other hand, prolonged chemical irritation promotes the pathological process, i. e., the dehydration, which is the chief factor in producing death.

11. The establishment of a favorable water balance is the salvation of the child. The route of preference must be that which offers the quickest absorption of large quantities of water when given to the baby. The rate of peritoneal absorption and the chances for putting large quantities at the patient's immediate disposal in a minimum of time makes the belly route frequently the method of choice. The speed and safety of the peritoneal method has been fully established. The subcutaneous route is sometimes used, and gavage is sometimes successful.

DIAGNOSIS

An established case of acute gastro-intestinal intoxication is not readily confused with other conditions. The violent onset after dyspepsia, the rapid dehydration, the insatiable thirst and the profound intoxication, are unmistakable. If seen late for the first time, the nervous symptoms may simulate uremia, a poliomyelitis or even a meningitis, but the history and other findings usually make the case clear. The hope of these cases is the early recognition. This is accomplished only by the eternal vigilance of the physician and the education of the laity to the danger lurking in bowel disorders. Consequently, consider all intestinal disturbances potential intoxication and follow each carefully for at least 24 hours.

TREATMENT

Prophylactic: The adage, "a stitch in time saves nine," was never better exemplified than it is in this disease. It is in the early recognition of acute gastro-intestinal intoxication and the institution of heroic treatment that we hope for favorable results. And yet it seems that in a certain percentage of cases death results no matter how early seen or how vigorous and skillful the treatment. It is these fulminating cases that are truly the despair of the physician and the puzzle of the profession at large. The aphorism that "prevention is better than cure" is fully applicable. Since the acute intoxications practically all give an antecedent history of indigestion or some mild gastro-intestinal disorder, the lurking danger and the potentialities of the mild bowel derangements should be constantly borne in mind. Once a case of persistent vomiting with diarrhea has developed, keep in intimate touch with the developments of the condition until at least the following day. It is better to make too many visits than too few, for the most experienced physician is, at times, misled by this type of case.

The exercise of the accepted rules of infant feeding and general care is a most excellent prophylaxis. To be specific, never wean a baby without a definite indication, for the breast-fed infant has five times more chances of living than the bottle-fed baby. It is desirable to maintain a few nursings when complemental feeding is instituted. To be accurate in this work is to maintain a check by accurately weighing before and after nursing. When feeders do poorly under artificial, or complementary feeding the value of the wetnurse or an occasional nursing is to be remembered. The qualitative and quantitative check on the diet of the bottle-fed baby needs constant watching. We frequently can ascertain the cause of the failing breast-milk supply and readjust the mother's habits of living, or the diet, or improve her mental attitude with beneficial results. Glandular therapy, we find, offers considerable hope of aiding the mother when given in the mammary and the placental combinations.

With our frequent high elevations of temperature during practically the whole year, it is imperative that you be sure of your milk supply. Boiling is a wise precaution, but boiling does not make good food nor render spoiled milk non-injurious.

We are convinced that chilling, as seen during the wide temeprature changes, has a marked influence on the incidence of the acute bowel disorders. It is, therefore, necessary to protect the infant from the extreme temperature changes. We advise the wearing of bands of wool, or part wool, from birth until the end of the second summer.

ACTIVE TREATMENT

Unfortunately, we have no specific remedy and our treatment is largely symptomatic. At the very onset of an acute gastro-enteritis stop all foods for a period of 12 to 36 hours. Boiled water with a 1 to 2% soda bicardonate content, in one-half to two ounce quantities at intervals varying from 15 minutes upwards, is given as needed to satisfy the thirst. A quick emptying of the bowel at this stage is desirable, but the stomach is often repellant to food or irritating drugs. Consequently, castor oil is usually contraindicated because of its tendency to provoke emesis. It is preferable to use the soda with one-quarter grain calomel combinations at short in-

tervals until one or two grains are retained. An initial colon irrigation, consisting of a gallon of normal salt and a 2% soda solution is highly desirable. If the antipyretic effect is desired, use the solution cool; otherwise, the warm irrigation is preferable. At the cessation of vomiting frequently repeated doses of deodorized tincture of opium with bismuth are very useful in checking the diarrhea. The cases which survive the initial attack of the acute intoxications and develop an enterocolitis are treated as the type and severity of the disorder demand.

The cases which show persistent vomiting and diarrhea in spite of the early treatment require more active measures. First, a hypodermic of morphine with atropine suitable to the age of the infant should be given at 2 to 3 hour intervals until the desired theraputic effect is produced. The doses of morphine usually employed are 1/100 gr. for a 6-months child; 1/75 gr., for a 12-months infant; and 1/50 gr. for an 18-months to 2-year child. Atropine, while well tolerated by children as a rule, is given in 1/1500 to 1/500 gr. doses as the age requires. Gastric lavage with a 2% soda solution given warm often helps to relieve the vomiting; the last 6 to 8 ounces, when left in the stomach, is often retained with very beneficial results.

To combat the dehydration is our most serious problem. We must neutralize the rapid loss of fluid and, if at all possible, maintain a favorable water balance. The two most practicable methods are the subcutaneous and the intraperitoneal routes. The intraperitoneal method is the preferable operation since a larger quantity of fluid can be given easily and quickly with a very rapid absorption. As much as 150 to 400 cc. of fluid can be given at one time and repeated in 3 or 4 hours if needed. The fluids that are advantageously used are normal saline, normal saline with 5% glucose, or Ringer's solution. In certain cases the nervous irritability of the stomach is only temporarily controlled with the morphine and atropine combinations, while chloral hydrate and sodium bromide are fairly well retained. In these cases the chloral and bromides are pushed until the sedative effects are attained.

Hot packs are frequently employed for their analgesic and quieting effects, while tepid packs have marked antipyretic value when given over a period of 20 to 30 ounces. Cold or chilling, except to the head, has a very depressing effect and seems to increase the shock-like symptoms.

Once the vomiting has stopped, we must proceed very cautiously. Fluids in the form of soda water, or very weak tea, may be given in one-half to one ounce quantities at 15 to 30 minute intervals, as needed. Food when resumed after a 24 to 36-hour starvation period must be given in very small quantities. It is wise to begin feeding with quantities of one to two ounces at the start. Milk products high in protein, as the Eiweiss milk, commonly known as buttermilk casein, or diluted skimmed milk with the commercial calcium caseinate, are the foods best adapted at this time. Combining a high protein diet with frequent small doses of opium and bismuth, the course of the diarrhea is usually short. The approach to the normal quantity of the protein milk is usually of short duration. Aversion to the bitter taste of the protein foods can be overcome with saccharine or with the addition of small quantities of unsweetened cocoa. However, the average child is sufficiently hungry and will readily take the food without masking the flavor. The early institution of carbohydrates in some form, preferably a dextrin, aids in a more rapid convalescence. Some children who recover from the diarrhea and intoxication die probably from the need of an easily assimilated food; hence the advisability of giving carbohydrates as soon as they will be tolerated.

When stimulation is needed, the child is usually too far gone for this to be of much value. Small doses of pituitrin seem to improve the cardiac action as well as aid in overcoming the toxic ileus with distention. Camphor and oil hypodermically give temporary aid in maintaining the circulation. Strophan-

thin is frequently resorted to and gives good temporary results. Eserine may be employed to improve the tonus of the over distended bowel that is so embarassing to cardiac and respiratory functions.

In conclusion we may assume that the final solution of the problem of the acute intoxication of infancy and childhood will be the summation of the work of observers. We feel that the addition of any observation will aid the profession in the ultimate control of this serious menace to early life.

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COMMON INFECTIONS OF THE KIDNEYS*

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The first and last impression I wish to leave on my hearers is that it is a much rarer talent to suspect that kidney infection is present than to diagnose it accurately after it is once suspected. In order to get before your mind's eye the all-important predisposing factor in renal infections, I wish to appeal to each of you to analyze your own experience regarding the lack of easy drainage in your surgical cases and its large proportion to the remainder. For this purpose, I present the following classification:

CONDITIONS FOR WHICH SURGERY IS DONE

I. Neoplasms

II. Plastic (Broader sense)
(a) Plastic Surgery Proper
(b) Orthopedics and Reconstruction
(c) Correction of Other Physical Defects, e. g.
Fracture
Hernia
Hydrocele
Cataract, Etc.

III. Surgery Endocrine Glands,

IV. (a) Surgery Intended to Facilitate Drainage of Natural Secretions and Excretions
Common duct stone
Gastro-enterostomy
Colostomy
Adenoids
Turbinates
Ureteral transplantation

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(*b*) *Drainage for Products of Inflammation* (*either by removal or simple drainage*)
Pus tubes
Appendix
Tonsils
Sequestra
Alveolar abscesses
Gall-bladder
Frontal sinus
Mastoid
Middle ear
Empyema
Ischiorectal abscesses
Perinephric abscesses
Paronychia, etc.

These are only a few samples, but one could go on naming them indefinitely. I venture the assertion that over fifty per cent of the surgery done is for drainage, assuming the above concept as drainage.

The kidney, instead of being the exception, is perhaps the most dependent on drainage of any organ in the body. For this reason, kidney infections have far more relation to this factor than to the presence of pyogenic organisms in the blood stream. True enough, specific pathogenic organisms, usually coming from a more or less remote focus—the focal infection of Billings—must be present to produce such lesions; but if there is no hindrance, appreciable or otherwise, to the urinary outflow, producing back pressure, ever so slight, stasis, or both, there is small risk of infection unless the dose of bacteria is overwhelming or the virulence extremely high. With perfect drainage, if there is infection, recovery takes place easily. In other words, the more cases one sees and the more carefully he has studied them from the urologic standpoint, the more he is convinced that mechanical factors are the all-important predisposing elements in their etiology. One does not need to assume actual obstruction; to illustrate, if one is using an ordinary sprinkling hose and rotates the nozzle to decrease the size of the jet, and the water is emitted in a smaller stream with greater force, he must assume that the rubber walls and fabric of this hose tube will have a much shorter life with an equal amount of use and abuse than if the point of ejected stream were of the same caliber as the rest of the channel.

It is extremely probable that we all have intermittent bacteremia, the bacteria being absorbed through the lymphatics and passed on into the blood stream from foci of infection at various more or less distant parts of our anatomy. We believe that the protective processes of the body combat these, and in most instances there are created no severe infections in other organs for a considerable or prolonged period unless an individual organ is predisposed; or unless by over-fatigue, exposure and chill, worry, anemia, malnutrition or some such factor, general as well as local, lowered resistance is produced.

The causes of back pressure or lessening of the free outflow of urine from the kidney are as follows:

I. Urethral
(a) Stricture, congential or acquired
(b) Contracture of the bladder neck
(c) Hypertrophied prostate
(d) Carcinoma of the prostate
(e) Rarer causes
Stone and neoplasm
Urethral diverticulum
Phimosis and pinpoint meatus

II. Ureteral
(a) Ptosis
(b) Aberrant renal vessel branch
(c) Calculus
(d) Angulation or kink
(e) Stricture or congenital narrowing
(f) Neoplasm of ureter or kidney pelvis
(g) Infiltration and atony of the ureteral walls (inflammation)
(h) External pressure
Pregnancy
Neoplasms
Pathologic lymph glands
Inflammatory exudates and cicatrices therefrom, as pus tubes and abscesses of the seminal vesicles.

(i) Neoplastic infiltrations (carcinoma of cervix and bladder

I am purposely giving the rare ones. But stricture, prostatic hypertrophy and prostatism from contracted bladder neck are the common urethral causes and the percentage of infected urine direct from one or both kidneys from these conditions with the so-called accompanying chronic cystitis, is surprisingly high, although the clinical symptoms are not usually those of pyelitis, and the treatment of the obstructive condition in the urethra is, in most cases, the best and only treatment needed. These are apt to be, but not necessarily, bilateral infections. Pathologic kidneys requiring renal surgery, on the other hand, are prone to be uniteral. The cases due primarily to urethral obstruction usually recover to a great extent by relieving the obstruction, with cessation of progress in the secondary kidney involvement and often with clinical recovery.

In the cases due primarily to mechanical factors in the ureter itself, a different condition obtains. The ureter being such a small tube, when encroached upon is further stenosed at one or more points. An angulation, external pressure or infiltration of the wall makes drainage highly difficult. One not infrequently sees enormous hypertrophy of muscle in the kidney pelvis therefrom. It seems to be a prevalent opinion that pyelitis or pyelonephritis is usually bilateral. This is not the case, however, as attested by many leading urologists of the world. In children and many women bilateral infection is common. The probable explanation of this in children is that they haven't lived long enough with bacteria to develop an appreciable degree of immunity. Ptosis is a factor in adult women in a surprisingly large percentage of cases.

Many times the scars of battle are left on both sides. But often both kidneys recover completely or only one side bears permanent marks of previous inflammation. With modern instruments and modern technic we have little difficulty in catheterizing the ureters of the great majority of children. The results of this simple treatment are often amazing. There can be little doubt that many of the cases of pyelitis of pregnancy are dependent on previous pyelitis of childhood. When we say pyelitis, we always assume nephritis as part of the pathologic picture. It is always a pyelonephritis, although the proportionate degrees vary. Pregnancy being a normal state, why should we have kidney infection except in a previously damaged or poorly draining organ or with marked foci of infection elsewhere? In the light of more recent investigations, the so-called septic multiple infarct is probably in many cases a lymphatic absorption. Hence, latent infections, not omitting cases in women and children, should be investigated adequately.

Regarding micro-organisms concerned in the production of the infectious nephritides, the colon bacillus has long been the scapegoat. In 1901 Le Fur seriously questioned whether it was the real causative factor or a secondary invader. Clinically, it has seemed in comparing cases of colon bacilluria that the less the amount of pus (down to none at all) and the less the clinical manifestations, the greater the abundance of bacilli in the urine. In cases with no pus whatever, and the urine opalescent from the B. Coli alone (not even enough other sediment to carry them down when centrifuged), there are usually no clinical symptoms whatever. The less the proportion of bacilli and the greater the proportion of pus usually means increase in serious symptoms and increase in pathology. But for a long time many urologists and eminent pathologists have been inclined to believe that the B. Coli was a secondary invader at its worst and often by reason of its antibiotic properties towards the growth of other bacteria—especially cocci—that it had a distinct therapeutic value. Recently, Bumpus and Meisser of the Mayo Clinic, in conjunction with the laboratory of Rosenow, have demonstrated that infections of the teeth and tonsils, especially, have produced a green streptococcus in cultures from apical granulomata, capable of producing lesions in

the kidneys and bladder when injected into the blood stream of animals, which on further culture prove to be pathogenic for the upper urinary tract in other animals. In these animals the predisposing mechanical factors were seemingly absent. But we must take into consideration the fact that in streptococcic infections a particular micro organism develops a special predilection or facility to infect that particular organ on inoculation into another animal; and that the same result will be brought about by growing these organisms in culture to which is added that particular tissue, such as kidney for example, and in these cases no doubt the organism develops a selective affinity for this particular organ. Clinically, however, we must assume other factors. With a focus of infection in a tooth or tonsil prior to its dissemination and localization in some more or less distant organ through the medium of the blood stream, it should be quite exceptional for the particular strain to possess specificity for a remote organ. Hence, one finds it plausible to expect (and clinically true in a surprisingly large number of cases) to find local lowered resistance in the particular remote organ affected. The specificity must be developed later after the kidney infection, for example, is well established. In other words, the primary infection of the kidney depends on the bacteremia plus the mechanical factor without the aid of specificity.

In this work at the Mayo Clinic, the streptoccoccus was the prevalent organism cultured from the teeth and tonsils. The healthy tooth of a dog was extracted with the greatest approach to asepsis possible under the circumstances and the apical cavity infected with a pure culture of this green streptococcus obtained from an apical abscess of patient with clinical pyelonephritis, sealed over, and this same dog developed typical kidney infection.

Colon bacilli obtained from the urine of pyelonephritis cases when injected into the blood stream of animals produce a very small percentage of infected kidneys. (Helmholz) Inversely, cases injected with pure cultures of green streptococci and producing grave septic kidneys fail, in a majority of the cases, to cause elimination of the streptococci in the urine, but is accompanied by a colon bacilluria when no colon bacill had been injected. It seems, therefore, that the streptococcus is a very common infecting organism and that the colon bacillus is incidental, secondary, or at times a really helpful organism, for the reason that it keeps the urine acid and prevents ammoniacal decomposition, and by its antibiotic properties towards the staphylococcus. In many cases of typical so-called colon bacillus pyelonephritis, an early examination discloses frank streptococci in the smears of the sediment from the urine taken by catheter and examined at once before bacteria have had a chance to multiply perceptibly. These disappear very soon as a rule.

Recently Rosenow, working with the Urologic and Dental Departments at Mayo Clinic, isolated a strain from the urine of a case of infected kidney with stone, which produced stone in 80 per cent of the dogs inoculated. This might possibly be due to the highly developed urea splitting power of these special strains of cocci.

The streptococcus and colon bacillus infect the pryamids, medulla and cortex in a more or less wedge-shaped manner. The staphylcoccus, on the other hand, is inclined to infect the cortex directly underneath the capsule and is of a milder type and much less likely to lead to the necessity of nephrectomy. These minute abscesses directly underneath the capsule and in the adjacent perinephritic fat are apt to result in perinephritic abscess and complete recovery after drainage of the abscess in the lion with no, or little, infection of the kidney pelvis. Chronic staphylococcic infection is often secondary to other pathology—e. g., stone or hydronephrosis. Tuberculosis probably always begins in the glomerulus and the bacilli, breaking through the damaged capsule of Bowman, secondarily affect the tubules and the infection manifests itself grossly in the pyramids and pelvis. Later it travels from

here towards the cortex by lymphatic invasion just as is the case in the infections described by Brewer as septic infarcts and manifested in acute septic infections by wedge-shaped foci of necrosis, which correspond to the lymphatic distribution and not to the arterial distribution as originally put forth by Brewer. Parenthetically, this is some proof that the acute fulminating infections are not new infections, but sudden fulminating lighting up of old latent infections.

No matter if a human being has focal infections of pyogenic nature or marked active tuberculosis (meaning certainly in each case that there is an intermittent bacteremia) the incidence of infected kidney is small unless there is lessened local resistance by reason of back pressure. The studies that have been made of a great number of pulmonary tuberculosis cases taken from the great clinical centers for this disease, namely the sanatoria, show a very surprisingly low percentage of urinary tuberculosis. Likewise, hospital cases of pyogenic infections of all kinds with grave constitutional symptoms and evident blood stream absorption reveal a very small incidence of kidney infections. The reason is apparent, notwithstanding the evident foci of infection; simply there is no lowered local resistance.

Other micro-organisms found in these infections are usually secondary invaders such as the bacillus proteus. Gonococcic pyelitis is very rare.

The *symptoms* of kidney infection are oftener than not markedly illusory. Patients not infrequently appear with one kidney totally destroyed, without history of a single pain attributable to it. Tuberculoosis is seldom diagnosed until there is marked secondary involvement of the bladder, for the reason that the true condition has not been suspected. Pyuria, irritable bladder that persists for months with an acid urine in which no micro-organisms can be demonstrated by the ordinary staining methods, is apt to be tuberculosis. The finding of tubercle bacilli in such a urine is apt to be a tedious process, but they should always be searched for diligently. The urine should be examined repeatedly at intervals of two or three days until the tubercle bacilli are found or one is satisfied that further search is useless. Guinea-pig inoculations should also be resorted to, but we have learned to place more dependence ordinarily on the smear for the reason that no prolonged wait is entailed. Often one can make a positive diagnosis of tuberculous kidney without finding the organisms; for instance—where frank pus with a mixture of little or no urine is withdrawn from one kidney and the cystoscopic appearance of infiltration, granulation and necrosis around or near the ureteral meatus is seen with or without the presence of tubercles in the bladder. The cystoscopic appearance, in other words, often enables you definitely to identify a pyonephrosis as tuberculous when repeated search has failed to disclose tubercle bacilli. It is extremely important to diagnose these cases at the earliest possible moment; otherwise the other kidney may become involved and even if it escapes, the tuberculous changes in the bladder will have progressed so far that their healing is often a process of months, up to a period of two years, and possibly will never heal if too far advanced.

Infections due to pyogenic organisms may often be relieved either entirely or partially by appropriate cystocopic measures, if diagnosed in time. If focal infections can be found they should all be attended to if there is any doubt whatever as to their being a factor in the urinary patholoogy. In this connection, I wish to lay stress on the great value not only of pyelograms but especially of ureterograms. With a suitable x-ray machine, stereoscopic bilateral pyelo-ureterograms may be taken with no more pain or disturbance, as a rule, than in the unilateral procedure, If one is careful to ascertain the presence or absence of pus, its proportion and micro-organisms, the dye function, and the ease with which each side is draining as evidenced by the drip through the ureteral catheter, bilateral pyelography is as free from danger and

serious consequences as any other major diagnostic method. It gives you the mechanical factors of the ureteral lumen, it reveals the nature and extent of previous pathology, both in the kidney and ureter, to a great extent. If it is not done we are frequently in the dark and we continue to use ill-advised, often harmful and seldom helpful methods in our treatment.

Let me reiterate, in almost every unilateral case, by studies before such a time elapses that advanced and overwhelming pathological changes mask the real etiological factor, one may find an important cause in the lack of drainage. In the pyelitis of pregnancy we believe almost always it is a lighting up of old pathology. This is also probably true of the hyperacute focal kidney infections—the so-called fulminating cases so prominently pictured by Brewer a few years ago.

The treatment of kidney infections is such a large subject and, aside from nephrectomy and removal of stones, is so obviously a class of work intended for the specialist, that I will not attempt to bore you with a discussion of a mass of highly technical procedures.

PRACTICAL APPLICATION OF THE TESTS OF THE VESTIBULAR APPARATUS*

DRS. STEPHEN A. and FRANKLIN P. SCHUSTER, El Paso, Texas.

The tests of the vestibular apparatus, in our newer light on neuro-otology, and the physiology of the inner ear, are absorbing studies. What the average clinician is interested in, however, is, (1) What is its practical value? (2) How can this knowledge be used in daily work without going through a long, complicated or impractical examination?

As the attention of the medical world is directed toward any new, revived or modified method of diagnosis or treatment, the tendency of the mass of medical men is to doubt its value. A few who investigate become extremely enthusiastic, and, in their enthusiasm, overlook many possible sources of error and explain away many inconsistencies. Finally, between the two extremes, after there has been a large number of clinical observations and experiments by the great body of the medical profession, its true value is ascertained.

We believe we are just beginning to learn the true clinical value of the tests of the vestibular apparatus. It is therefore our idea in this paper to urge a wider use of these tests by the great body of clinical men. The tests we refer to are the rotation and caloric tests of Barany, the technic and standardization of which have been so ably worked out by Drs. I. H. Jones of Los Angeles, and Lewis Fisher of Philadelphia.

In the routine examination of a neurological case it is customary to examine the function of each cranial nerve. The value of examination of the eye has long been recognized. The pupillary reactions, the fields of vision and the fundus often give remarkable diagnostic aid. Even in medical and surgi-

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cal cases, such as diabetes, nephritis and syphilis, we have information in the eye. In examination of the ear, until relatively recently, the doctor has been satisfied with a slip-shod examination of the hearing—the cochlear portion of the eighth nerve—and has disregarded, in most instances, the vestibular portion where we have an extensive and exact field with intimate connections in the medulla, pons, cerebellum, cerebrum and, through these, with the eye and the entire voluntary musculature of the body, from which to gain diagnostic and localizing information.

It is assumed that you are all familiar with the Barany-Jones chair for making the rotation tests. It is simply a smooth running rotating pedestal chair with foot stop-lock and a head fixation apparatus.

It is not necessary to go through a long and impractical examination to determine whether the vestibular apparatus is intact or not. The patient is first examined for spontaneous phenomena as nystagmus, past pointing or falling reactions. He is then placed in the Barany-Jones chair and with the head held thirty degrees forward, in the plane of the horizontal canals, is rotated first to the right and then to the left at the rate of ten times in twenty seconds, and the character, amplitude and duration of nystagmus and vertigo noted after each turning. This is repeated at the rate of ten times in ten seconds and past pointing tried. This tests both horizontal canals and their central pathways and if the reactions obtained are within the normal we can conclude that this portion is normal. The vertical canals are similarly tested by rotation with the head held one hundred twenty degrees forward. This examination should not take, at the outside, more than five minutes.

If, however, some response is absent, subnormal, exaggerated or perverted, then it becomes necessary to go into detail, separating each ear, each canal and each central pathway to determine where the function of the vestibular apparatus is interrupted. It is true that these details may be too impractical to go through routinely by the average clinician. This portion of the examination should be done by the specialist and the field rightly belongs to the otologist.

Of course, in well advanced cases with classical signs present, these tests are not needed for diagnosis, although they do give valuable additional information as to location, extent of pathology, operability, and prognosis. That is, in a case of brain tumor, for example, with severe headache, slow pulse, projectile vomiting, choked disk and possible focal symptoms, the diagnosis is easily made without the vestibular tests. The tests are indefinite or only corroborative of a diagnosis made on more direct evidence. In fact, it is in these advanced types of cases where the tests are the least reliable. It is the early and rather vague cases of replacement tumors, etc., where we do not have extensive lesions or associated pressure effects to interfere, that the tests are of the greatest value and the most reliable.

This is especially true in the large number of cases in ordinary practice who come to us vaguely complaining of vertigo. This symptom, so common to a large number of different diseases, may mean only a trivial thing, as impacted cerumen or refractive error, and yet it may be the first indication of a serious condition in the brain actually menacing life. We now know that all organic vertigo means involvement of the vestibular apparatus,—the inner ear and its central pathways. The practical application of these tests gives us definite information as to pathology in the ear, in the brain, or conditions outside of the vestibular apparatus affecting it in a toxic or reflex manner.

Where the vestibular tests have failed so far has not been due to faulty responses, but to faulty technic, or faulty interpretation of the responses obtained. The constancy of the normal responses has been amply proven by the very large number of routine examinations for candidates for the air service of the U. S. Army.

I shall not discuss the technic further than to say that if we expect results, it

must be exact, uniform, checked by stopwatch and repeated if pathological.

Interpretation of results is the hardest thing the otologist is called upon to do. It is here that the over-enthusiastic otologist is most likely to fail. He should not force himself into a clinical diagnosis simply from the results of the tests. His interpretation should disregard the clinical picture entirely,—as the Wassermann reaction does. That is, he should first summarize the results and then find one anatomic location which could account for all the reactions obtained. His interpretation should read, for example, 'interference with vestibular responses at the decussation of the superior cerebral peduncles," and not "tumor or cyst" at this location. Then, if on post-mortem, we find a tumor in sime distant area and not involving this location, it does not mean that the vestibular tests gave a false reaction. The vestibular paths were actually blocked at the indicated location not by the tumor growth, but by the associated pressure effect. Microscopic examination would undoubtedly show some evidence of degeneration at this point due to the pressure and account for block of normal reactions. This is why the tests are least reliable as a diagnostic aid in advanced cases.

What we should do then, is to use these tests more generally, especially in vague cases and then check up the report of the otologist by further clinical observation, experiment, surgery and post-mortem examination. This is the only way their practical application is going to be of great value as an aid in clinical diagnosis. We shall learn in this way that blocking of certain responses from the vertical canals, for example, does not mean tumor of the pons, but an internal hydrocephalus and soon we shall be able to offer clinical diagnosis in addition to anatomic ones with a reasonable degree of certainty.

Granting that there are many possible sources of error in making a diagnosis from the tests, still there are certain groups of cases in which the tests give very definite information where other means of arriving at this diagnosis are indefinite or lacking. It is these types of cases to which we wish to direct attention.

In the occupational lines, the tests give rapid and accurate information as to the adaptability of applicants in certain lines of work. Steeple-jacks, construction workers, aviators, etc., where safety so largely depends on an intact vestibular apparatus, should all be submitted to these examinations.

In malingering, as deafness, vertigo and neurologic symptons, the presence or absence of proper responses from the vestibular apparatus often determines their true character.

In acute labyrinthitis, decision as to operative interference depends on the complete destruction of the labyrinth, according to Ballenger. This complete destruction of the labyrinth is determined only by the vestibular tests.

Case M. G., male, 25 years, was referred to us with the complaint of vertigo associated with nausea, slight deafness and headaches of two years duration. His physician reported that he suspected an intracranial condition and that his general physical examination including teeth, urine and Wassermann was negative. The nose, throat and sinuses were negative; ears negative except for moderate conduction deafness. Applying the vestibular tests we were able to report "normal vestibular apparatus." The eye revealed no pathology except for a marked off axis astigmatism. As refractive errors frequently affect the vestibular apparatus in a reflex manner, this error was corrected fully and gave prompt relief of symptoms.

We cite this rather simple case to illustrate the fact that indefinite cases wander from physician to physician variously treated as brain tumor cases, syphilitics or as gastro-intestinal cases, etc., because headache, vertigo, nausea and vomiting are symptoms so common to diversified pathology. The tests systematically rule out the ear and brain as the site of the pathology.

Cerebello-pontine angle tumors give rather characteristic responses, so that we may almost class these responses as a symptom complex. Absence of all responses on the affected side and absence of responses from the vertical canals on the opposite side points rather definitely to pathology in the region of the cerebello-pontine angle.

In conclusion, we again urge the wide use of these tests as an aid in clinical diagnosis. Otologists should give an unbiased anatomic interpretation of the responses obtained, leaving their clinical significance to be determined by further observation, experiment, surgery, and post-morten examinations. In this way we shall soon build up, on clinical experience, a series of vestibular symptom complex responses, many of which may become as valuable in brain pathology as the Wassermann and the Widal tests are in syphilis and in typhoid fever.

NOTES ON AN UNUSUAL CASE OF LEPROSY*

By DR. ALEXANDER WALLACE, Nogales, Arrizona.

A Mexican waiter, age 51, presented himself for examination and treatment on Sept. 11th, 1919.

CHIEF COMPLAINTS: Pains and aches lachrymation, fever and diarrhea.

PRESENT SYMPTOMS: For five years he has suffered pains and aches. These would be of several types: Pains and aches throughout bones and soft parts, worse at night and on movement, but constant in moderate intensity. Very sharp pains originating in the buttocks, and extending to the feet, lasting for a few seconds, and returning in 15 to 45 minutes, also worse at night. With these, flexion of the thigh and leg. Neuralgia, over the left eye, in character much similar to the leg pains. The sensation on walking that a nail penetrated the heel, constant. For five years, paresthesia, and anesthesia of region around the left eye, left face, left temporal region, legs, arms and hands; these felt as if larger and objects felt as if of larger size and as if they had increased in weight. For three years persistent and very troublesome lachrymation. Feels as if he could not close left eye. Loss of memory. Difficulty in speech and at times entirely unable to articulate; at others, only imperfectly, stuttering and stammering occasionally. Diarrhea for two years. Progressive weakness. Insomnia. Vertigo to the point of falling. Fever; 100 to 102, particularly at night.

PAST HISTORY: Had never had a disease of importance, including the ordinary diseases of childhood. Chancre several years ago—but no secondaries.

PHYSICAL EXAMINATION: A moderately well developed Mexican male, 135 lbs. weight, 5 feet 4 inches. Legophthalmos of left eye with lachrymation in same; obliteration of the folds of skin left face, suggestive of facial paresis, *paraesthesia around left eye.* Nose, throat, ears negative, chest and abdomen negative. Glandular system negative.

NERVOUS SYSTEM: Exaggeration of deep tendon reflexes: patellar, achilles, biceps, supinator longus. Skin reflexes negative. Rhomberg positive; ataxia, incoordination of movements, no tenderness of muscles masses; no change in temperature sense. Blood picture shows nothing abnormal. Urine negative. Wassermann on blood three plus.

DIAGNOSIS: Syphilis of the nervous system.

*Read before the joint meeting of the Medical & Surgical Association of the Southwest and the Pacific Coast Roentgen Ray Society at Phoenix, Ariz., December 1-3, 1921.

TREATMENT: Intensive antiluetic: 10 injections of neoarsphenamine; daily inunctions of Mercurial Ointment (4 grms.) 15 in number, alternating; potassium iodide in 60 gr. doses 3 times a day were given in a period of 4 months. This resulted in disappearance of fever, paraesthesia, pains, diarrhea, ataxia, vertigo, and speech defect, in gain of weight; but persistence of lachrymation. The patient disappeared from observation from January, 1920, until June 1921, when he came with the following history:

CHIEF COMPLAINTS: Pains and aches, eruption, paraesthesia, lachrymation and fever. Had been well until November, 1920, when the lachrymation of the left eye became worse, the paraesthesia around same increased, and soon a raised patch around the eye developed; he began to lose his eye lashes, brows, mustache, hair; an eruption began to appear over the body; paraesthesia and anesthesia appeared connected with the eruption, particularly the type of eruption not raised; pains now were aches, also throughout the body; but never sharp or paroxysmal; hands, which had resumed the normal feeling, again felt larger; the fever returned, particularly at night, and would range between 100 and 103; lachrymation was worse, being now almost a constant stream. All these symptoms became progressively worse, until he presented himself again on the 25th of June, 1921.

PHYSICAL EXAMINATION: The facial expression of patient had changed. One would not recognize the same individual. The hair of eyebrows, lashes, mustache, and beard had fallen; an eruption, of a violaceous color, raised 3 or 4 mm. over the level of the skin, in thick folds, *anesthetic*, extended over the face, beginning over the left temporal region, to the right of forehead, nose, cheek, lips, mouth, neck and back and around to the left ear. Lachrymation was marked. Tears would flow in an almost constant stream from the left eye. Right negative. Examination of internal organs showed nothing abnormal. An eruption of two types covered the body of the patient:

(1). Papular and tubercular, of a violet reddish color, distributed irregularly over neck, body, arms, and legs, forming circles 2 to 5 mm. in diameter, to patches 3x5 cms. Some of these areas were hyperesthetic, others paraesthetic, and still others anesthetic.

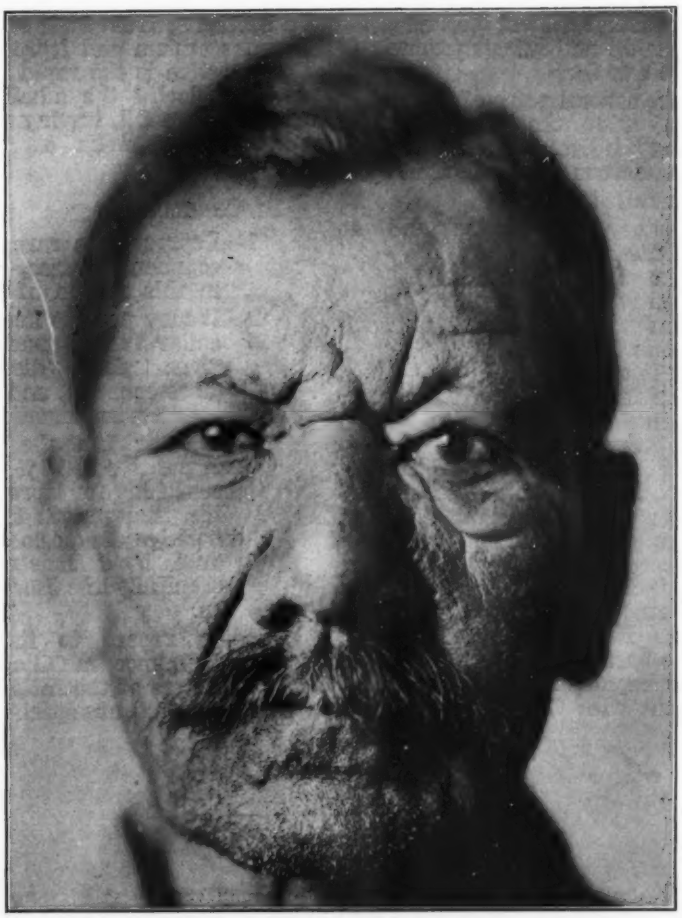
(2). A macular eruption presenting light colored areas, in irregular form. These were markedly irregular areas, bound by a light brown zone of 2-3 m.m. in width with a dark brown outer zone of 5-7 m.m. wide. These were distributed over the body, but most noticeable on the back, nates, and thighs; irregularly alternating with the papulo-tubercular eruption, and completely anesthetic.

NERVOUS SYSTEM: Exaggeration of all deep tendon reflexes, absencec of skin reflexes and of the reflexes of defense; positive Rhomberg; ataxia. Blood picture and urine showed nothing abnormal. Wassermann one plus.

TENTATIVE DIAGNOSIS: Leprosy.

A piece of tissue was removed from the neck from one of the patches of the papulo-tubercular eruption, and microscopic examination showed this virtually loaded with the Bacillus of Lepra.

Before the diagnosis was settled Chaulmoogra Oil had been administered, intramuscularly twice a week, beginning with 1 c.c. and soon increasing to 2 c.c., and once to 4 c.c. A short time after the beginning of treatment the fever, lachrymation, pains and aches disappeared almost completely and soon thereafter the papulo-tubercular eruption of the face became of a more natural color; the skin seemed to recover its natural elasticity and resumed its normal folds, and with that disappeared, too, the paraesthesia and anesthesia. The distinct color zones of the macular eruptions and the clear colored internal spots assumed more and more the natural color of the skin, until at present one does not find on examination, the macular eruptions and only vestiges of the papulo-tubercular. The anesthesia of the macular



Photograph of case of Leprosy, showing the skin lesions of the face and forehead.

zones has also disappeared. The dose of 1 c.c. of Chaulmoogra Oil produced *no* reaction, but, following the increase of dosage from 1 to 2 c.c., the patient noticed a so called reaction, evidenced in fever (100 to 102) and malaise and after the increase from 2 to 4 c.c. fever 103 to 104 for several days, with anorexia, vomiting, diarrhea, nervous irritability, diminution in the quantity of urine eliminated in 3 or 4 days, and an occasional syncope during this time. At no time has there been a paroxysm of coughing after an injection, as reported in the Leprosarium in Hawaii. An effort to secure the Ethyl Esters of Chaulmoogra Oil proved unsuccessful until recently. Of recent years, it has been proven by McCoy, Dean, and others connected with the U. S. Public Health Service that the fractionation of Chaulmoogra Oil and the mixed Esters of the fatty acids of the oil are the "so-called" active principle of the drug. This product may be obtained in small amounts from Leprosarium in Hawaii, with permission of the Surgeon General and is marketed by the Winthrop

Chemical Company of New York and Borroughs Wellcome Company of London. The Ethyl Esters are administered by mouth and intramuscularly in doses from 1 to 5 c.c.

There are several notes of interest in connection with the case reported above: Was the first diagnosis of syphilis of the nervous system correct?

In favour of it are:

a—History of infection and no treatment.
b—Clinical findings.
c—Positive Wassermann.
d—Marked improvement on antileutic treatment.

Against it are:

a—The fact that the Wassermann is positive in 70% of lepers, (Statistics of Meier) (Lepra Biblio-International Bd. II 340)
b—The long incubating period and slow progress of the disease.
c—The clinical findings; and in these, of most importance the eruption, and its anesthetic characteristics.
d—The findings, on sections, of the bacillus of lepra.
e—Its rapid and successful treatment with Chaulmoogra Oil.

Are two conditions associated in the same individual, at the same time? Is he suffering from both syphilis of the nervous system and leprosy? Against this question is the rapid improvement which followed the administration of Chaulmoogra Oil, leaving no symptoms resembling syphilis of the nervous system.

IN CONCLUSION:

1—Leprosy is a rare but not uncommon disease, particularly in this section of the country.
2—It may present itself under peculiar forms, masking,, in its pleomorphism, diseases by far more common, and, on that account, pass unnoticed.
3—The fact that the Wassermann is positive in 70% of lepers, is confusing for leprosy and syphilis, and proves that the only positive diagnosis of leprosy is made by demonstrating microscopically the Bacillus of Lepra.
4—In regard to its treatment: Chaulmoogra Oil and the mixed Esters of the fatty acids of the same oil are specific.

THE ACTION OF RADIATION ON TONSILLAR AND HYPERTROPIED LYMPHOID TISSUES*

ALBERT SOILAND, M. D., F. A. C. P., Los Angeles, Calif.

To Witherbee, of New York, all credit is due for his pioneer work with x-radiation in the treatment of diseased tonsillar and associated lymphoid structures. He has already reported several hundred cases carried to a successful termination, and his results are now being verified by other radiologists. As a matter of fact, when we stop to think of the primary influence of radiation upon embryonic and lymphoid cells, it is remarkable that no one began the use of x-ray for tonsillar and adenoid disease years ago.

*Read before the joint meeting of the Medical & Surgical Association of the Southwest and the Pacific Coast Roentgen Ray Society at Phoenix, Ariz., December 1-3, 1921.

Immediately after hearing Witherbee's report, I began to look into the throats of patients who previously had received radiation in my hands for other conditions of the throat and neck, principally cervical adenitis and goitre. In these post radiation cases examined, I have failed to find a single one which showed any pathological enlargement or other signs of an active or potentially infectious tonsil. The picture presented by these patients has been almost invariably that of a smooth mucous membrane over a retracted tonsillar base. The significance of these x-ray tonsillectomies, if such a term be permissible, is of more than ordinary interest, in that they open up another field of radiation possibilities, and add further evidence that radiation is one of the strongest arms of medical science, one that merits the closest study and development by all progressive medical men.

The bulk of the work so far recorded, from those who have treated a sufficient number of tonsillar conditions, has been with the x-ray, but there is no reason why radium cannot be used with has been with the x-ray, but there is no reason why radium cannot be used with equal success. While I have personally been subjecting to x-rays those tonsil cases that have been referred to me in the past eighteen months, I selected six additional patients, all with hypertrophied and pathologically functionating tonsils, whom I have treated with radium. In these cases, the offending tissues were obliterated in the same manner as with the x-ray and in approximately the same length of time.

In my x-ray series, including to date twenty-three patients, the majority have been subjected to the technic suggested by Witherbee. A few, however, were purposely exposed to more intense x-radiation to observe if any variance in the effect could be detected. It does not seem to make very much difference in the patients so far treated, except that the time factors are somewhat in favor of the latter.

Among radiologists a spirited discussion has been started as to what quality of rays are best adapted to this work. Apparently it makes little difference in the end results. An application through heavy filter does not destroy the tonsil tissue as quickly as an equal amount of radiation passed through a lighter filter. Ullmann, of Santa Barbara, has demonstrated by microscopic study that the tonsil becomes sterile with equal rapidity, irrespective of density of filter, but he also notes that the heavier the filter employed the more slowly the tonsil tissue disintegrates. In my own series, so far no attempt has been made to treat children, although there is no reason for limiting the work to adults. In fact, it is in children especially that this work seems indicated, and it must be apparent to all that when the public learns that radiation can safely destroy the offending tonsil, this method is destined to become popular.

It is quite natural to infer that the throat surgeon will more or less vigorously resent the entry of radiation into his own territory, and, in all fairness to him, it is not the intent of the writer to take away the fruit of his efforts after years of precedence, for he has placed the science of throat surgery upon a plane which is second to none in medical and surgical arts. He is destined to continue in his work until he can become convinced, if the test of time shows, that radiation in this line of pathology offers curative results more easily secured than by operation.

It is by no means yet positively established that all tonsil conditions will yield equally well to radiation. Here the same requirements will be demanded: namely, a sufficiently large group of cases must be subjected to the treatment and sufficient time must be allowed to elapse in order to be sure of the end results before any definite comparison can be permitted.

Judging from reports of cases already quoted and also from personal study, there can be no question as to the ability of radiation to destroy the immediate offending lymphoid tissues. The whole matter resolves itself into a question of personal ability and judgment in prescribing the correct dosage factors indicated. As is true of other

conditions, we must remember that we can easily lay down a definite technic or dose formula, but this can only be along general lines, and the same care in selecting the individual dose is just as urgent as in laying out a lethal dose for a malignant condition.

As has already been pointed out by Witherbee and others, it is of considerable importance to avoid the parotid gland, by keeping this organ completely out of the field when exposing the tonsil region. If this is not done, susceptible individuals may have an acute swelling akin to the mumps. Other than this detail, contra indication to radiation for tonsillar disease has not been observed.

The applied dosage is comparatively smaller than that required in other conditions responsive to radiation. In fact, the exposure need never be carried to a point where there is the slightest disturbing action upon the contiguous or surrounding tissues. This may be emphasized by stating that the changes adduced in all adventitious lymphoid structures of the throat are so definite and can be so readily visualized that one need feel no hesitancy in recommending radiation in this field.

For a standard technic, Witherbee recommends a seven-inch gap, ten-inch distance, three millimeters aluminum filter, five milliamperes on the tube circuit, and four minutes exposure. These exposures are given two weeks apart, until a total of from six to eight have been applied. My own procedure varies slightly from this, in that we use a somewhat higher group factor, and give a little longer time exposure. No particular advantage is claimed for this, except that we obtain the results in a little less time.

A word concerning the use of radiation in malignancies and other conditions. I have stated on former occasions that I do not believe x-rays and radium will be the future cure for cancer. I believe, however, that when combined with intelligent surgery that they are still our best weapons for defense in this terrible affliction. I do believe further that in diseases of metabolism and perverted glandular function, we are to find our future outlet for radiation therapy.

In conclusion, the writer feels that we are yet only at the threshold of the future possibilities of this potent force.

A NEW AND ADVANCED SURGICAL TREATMENT OF BREAST CANCER*

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Within the year a statement has been published that the limit of surgical technic in carcinoma of the breast has been reached, and because of this, nothing further could be hoped for in the way of improvement in the statistics of breast operations for cancer.

In this paper I want to add five new and additional steps to the technic of breast operations, that will, I am sure, improve very materially the present day statistics of this operation.

First: The use only of the hot knife in the removal of breast carcinoma, including a complete dissection of the axilla, and, if necessary, of the neck.

FOOTNOTE: *This paper, in substantially the same form has been published in Surgery, Genecology and Obstetrics, for October, 1921, and the illustrations were loaned us by that publication, to accompany the article in the journal.*

Second: That no attempt be made to preserve or secure skin flaps.

Third: That the skin around the denuded area after the removal of the breast and axillary glands be undermined from two to four inches with the cautery knife.

Fourth: In the after treatment, besides the use of Dakins solution, that the arm on the operated side be maintained in an elevated position with the forearm resting on the top of the head, until the surface denuded by the hot knife is practically entirely covered with new skin.

Fifth: That vigorous, daily massage and forcible movement of the skin and arm adjacent to the denuded area be instituted as soon as granulations have commenced to appear.

The balance of this paper will be devoted to the discussion of these five procedures.

Rodman, in his book on Cancer of the Breast, makes the statement that if the cases are seen early the modern operation with the cold steel knife, in trained hands, should give a 50% immunity from return, local or general, for a period of five years or over. I have not had time to look up the percentage of local recurrences in cancer of the breast. Based on my own experience, however, I am assuming that generally it is high. All of the recurring cases that are sent to me for re-operation with the cautery knife had their primary surgery done with the cold knife.

It is not necessary to discuss with you the need for improving our operative results in the treatment of cancer, breast or otherwise. The efforts made by surgeons in the past to prevent local recurrences, following operations for this disease, is a most fascinating chapter in the progress of the surgical art. The outstanding thing has been the constantly increasing endeavor to cut wide of the disease. Our English confreres deserve an immense amount of credit for the clear-headed way in which they have not only demonstrated the extent of the local problem in cancer, beginning with Benjamin Bell in 1804, but because they have also, based on their investigations, met it by the operations devised in that country to improve their results.

It is no part of this paper to dwell on the question of diagnosis, except to urge that an examination of the thorax be made in every case. This is especially important if the breast is fixed to the chest wall. But I want to emphasize here that fixation alone is no contra-indication to obtaining a successful result by a cautery knife dissection and amputation of the breast. Just how curable this type of case may be, following this use of the heat technic, I have not had a sufficient number of cases to determine. No breast case is inoperable with the cautery that has not yet developed palpable spinal cord lesions or metastases into the upper abdomen, a bone involvement, or a carcinoma en cuirasse. One of my cases developed a recurrence in the lung six years after a Halstead operation with the knife. When this condition was recognized, I gave massive doses of x-ray almost recklessly, because of the seeming hopelessness of the outlook. The result was severe and extensive burns anteriorly and posteriorly. These were subsequently skin grafted successfully and the woman is still alive and well nine years after the use of the x-ray, or 15 years and 6 months following her primary Halstead operation. If this woman had been abandoned to her fate and not been given the benefit of the x-ray treatments to combat the recurrence in her lung, a fatal termination undoubtedly would have resulted long ago.

The point that I want to make is that if the cancer, in its progress, has not already upset vital physiological functions in the patient to a degree that is evidently hopeless, she should be given the benefit of cautery knife surgery regardless of how extensixe the primary mass of cancer itself has become.

The inoperable case of cancer is so hopeless that its consideration from the standpoint of treatment places it outside the realm where ordinary surgical judgment can rule or guide us. It is in this class of cases that the cautery knife often gives its most beneficent results.

The outstanding fact regarding cancer everywhere in the body is its vicious tendency to easy dissemination. Were it not for this supreme fact the cancer question would be robbed of its chief importance. The cold steel knife does nothing to circumvent this easy characteristic of the disease. And this applies practically as far as cold surgery is concerned to the early as well as the late case.

The unheated knife does not devitalize any of the malignancy it does not remove. *The hot knife does.*

The cold knife does not spoil the soil for the further development of cancer. *The hot knife does.*

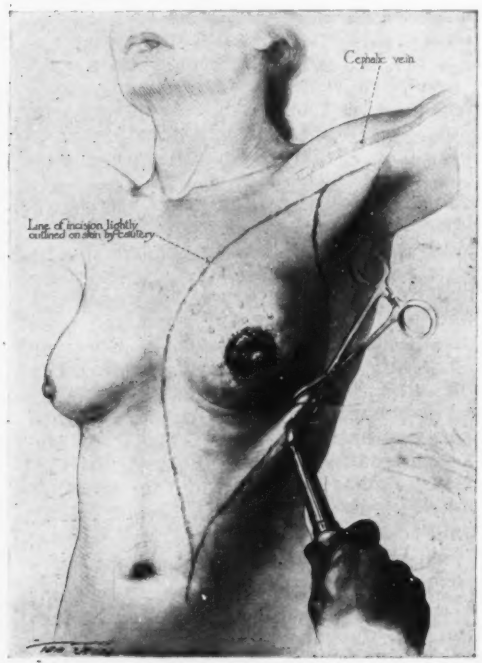


Fig. 1. Incision is first lightly outlined on skin with cautery tip and then started by thrusting it through the elevated skin into subcutaneous fat and continued by following the outline. Always cut from within outward with the cautery knife. A less extensive excision may be considered desirable with the formation of flaps which permit of closure in early cases and where the growth is small and moveable. Note relation of incision to cephalic vein.

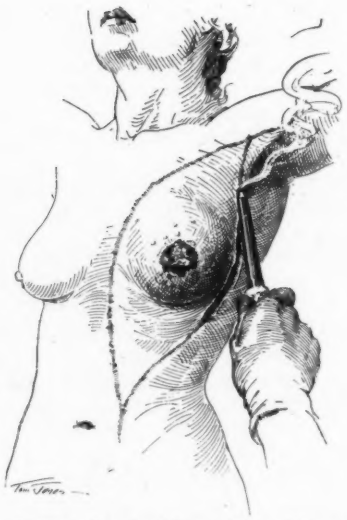


Fig 2. Showing incision with cautery knife cutting from within outward.

The cold knife, if it touches cancer, vaccinates it into new areas. *The hot knife does not.*

The cold knife stimulates the growth of the unremoved cancer cells. *With the hot knife this is impossible.*

It is these failures of ours, after the use of the knife, to prevent the recurrence of cancer, at least in the operative field, that has disheartened the public as to our ability to do anything with it except to give it unhindered permission to commence again.

The actual technic of the use of the hot knife in cancer has for its main purpose the wide removal of the proximate lymphatics with their load of malignant cells and the destruction of the distant ones by the dissemination of the heat as far as it is possible to make it go. It is for this reason that I do not strive for flaps. The skin that is required to make them is too intimately connected with the primary growth. We have no way of knowing whether they contain cancer cells or not, and too often we learn, when it is too late, that they did. In addition to this, my work has conclusively demonstrated that they are not needed. If the resulting hyperplastic granular mass which nature puts

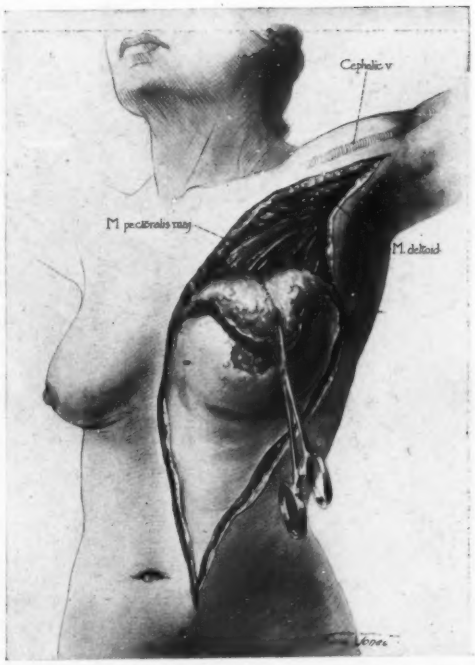


Fig. 3. Incision of the skin completed. The cautery knife is made to loosen up and infiltrate with heat the structures between the fascia and skin from 2 to 4 inches all around the primary incision. Care should be taken to preserve the cephalic vein between the pectoralis major and deltoid muscles.

Fig. 4. Dividing the pectoralis major. Exposure of the axilla with the cautery is no different than other surgical methods in this region except that the hot knife is used throughout. It is important in dissecting the axilla to keep the fingers of the free hand near the cautery tip. In this way one lessens the danger of getting careless in overapplying the heat to the blood vessels and brachial plexus.

in their place is properly manipulated, *i. e.*, massaged, a new skin, which is a remarkably good substitute for the original, develops. Without flaps the cautery knife destroys an immense number of malignant cells just from its minor or surface application. To get this result does not require a high temperature, one sufficient to melt fat being all that is necessary. "The balance in cancer is easily upset," and it is more vulnerable to heat than to any other known agent used for its destruction. Without flaps, if a local recurrence develops, all that is required to destroy it is the application of a four per cent solution of cocaine and the re-application of the heat of a heating iron for a few minutes. But I hasten to add that I have never used the heating iron or cocaine in this way because I have yet to see a local recurrence of this nature, following the use of the cautery without the formation of flaps. In other words, the surface of the body denuded of its skin by the cautery knife, because of cancer, is left in a condition which is not favorable for the re-development of the disease.

The third important part of this technic, aside from that already emphasized, viz., the use of the hot knife and no flaps, is the important one of undermining the skin with the cautery around the circumference of the denuded area. This has for its only purpose, not the formation of flaps but the destruction of lymphatics and the annihilation of their potential load of malignant cells. This undermining is especially important toward the clavicle because the major chain of its lymphatics is connected with those from

Fig. 5. Removal of the axillary gland-bearing fascia. The small vessels running into this mass are severed with the cautery knife and ligated with No. 1 catgut. After this dissection the entire breast is removed with the cautery from the chest wall by separating the pectoral muscles and skin from the ribs. Any pathologically infiltrated or adherent areas are gone over again and are thoroughly heated after the removal of the gross mass. The heating iron is also passed slowly over the intercostal muscles.

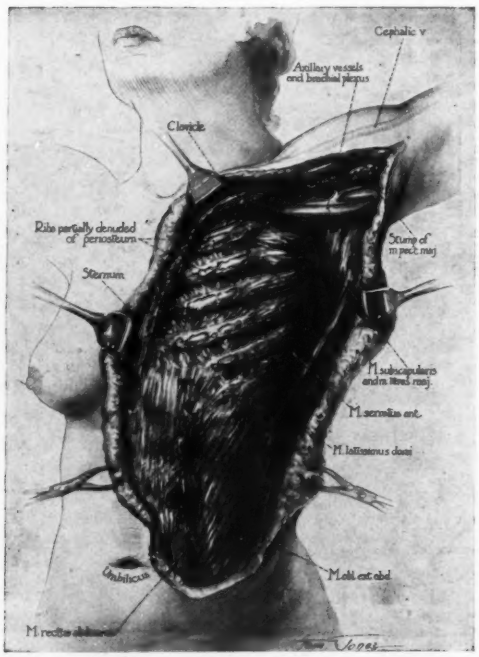


Fig. 6. The completed dissection. This is done with the cautery knife only. The edges of the wound are extensively mobilized, the brachial and axillary vessels are dissected free with the hot knife leaving them absolutely clean and cancer free. The heat is thoroughly spilled into the apex of the axilla and also over the fascial coverings of the rectus muscle down to and including the umbilical region. A temperature sufficient to melt fat is usually all that is required in these regions. As a last procedure the cautery shank is slowly passed over the intercostal muscles. This accounts for some of the destruction of the rib periosteum shown in the illustration.

the axilla. Next, across the sternum, especially at the second and sixth interspaces where the lymphatics dip down into the chest. If this undermining of the skin is so complete as to involve the sternal border of the opposite breast, the practical results in the way of a lessened chance of a recurrence will be increased. And then the hot knife should be very thoroughly and extensively passed downward over the fascia covering the upper part of the rectus muscle, toward the umbilicus. This was the region pointed out by Handley of England in 1904, as one where the permeation of cancer cells was especially dangerous. He taught that a large number of the malignant infections of the liver occur as the result of metastases through this chain of lymphatics. Finally, the skin should be loosened and the fat between it and the fascial coverings of the external oblique and the latissimus dorsi, up to and involving the scapula, melted and even made to boil. This will loosen a long strip of skin posteriorly which will drop down on to the operating table because there is nothing to hold it. It is held in place at the final dressing, however, by heavy wire hooked into the edges of

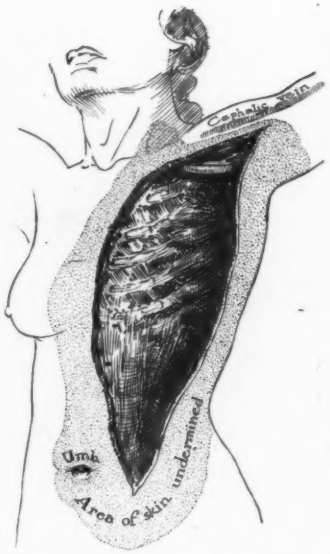


Fig. 7. Diagram showing approximate extent of undermining a skin for the dissemination of heat.

the skin on each side of the denuded space. A practical point is not to permit the hot fat to run down over the normal skin as it produces an annoying superficial burn.

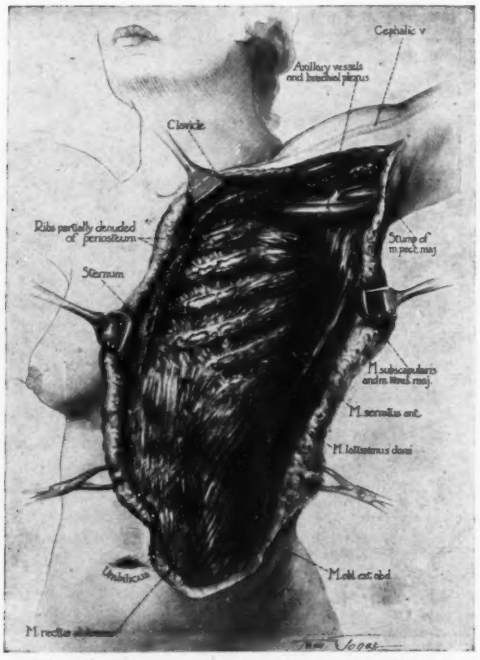
The two remaining steps of the technic that are new refer to the post-operative care of the patient. If the arm on the operated side is kept closely approximated to the side of the head and the forearm turned over the top of the head and fastened there, the patient will obtain the maximum of comfort. I have experimented with many different forms of apparatus and methods to maintain this position of the arm, but have found none so satisfactory or efficient as the simple placing of a clove hitch aroun dthe wrist and tying the other end of the bandage around the opposite shoulder. As far as I know this position is original with this operation. It has many things to commend it.

(1) It is more comfortable than when the forearm is placed upon the chest, and the arm rigidly bound to the side of the thorax.

Fig. 8. The completed operation. The skin edges are hooked on to No. 14 copper wire (English standard), protected at intervals by sections of split rubber tubing, the arm is kept constantly over the head except when the wound is dressed. A rubber dam drain is placed below and at the back. The first dressing is made in three or four days and narrow rubber tissue strips are then applied across the wound at inch intervals. Dakin's or Eusoi solution is applied after the first dressing until granulations appear, then dichloramine-T is substituted. The arm is maintained in the position indicated by a "clove hitch" and fastened around the opposite shoulder by a rather ample or thick gauze bandage.

(2) Most important, it requires the natural reparative powers of the body to supply a sufficient amount of new skin to permit of the final maximum normal movements of the arm. It is comparatively easy to get the arm down after being in this position, if necessary, for weeks or months; but it is almost impossible, as you all know, to get it up if the healing process has occurred while the arm was down.

Fig. 5. Removal of the axillary gland-bearing fascia. The small vessels running into this mass are severed with the cautery knife and ligated with No. 1 catgut. After this dissection the entire breast is removed with the cautery from the chest wall by separating the pectoral muscles and skin from the ribs. Any pathologically infiltrated or adherent areas are gone over again and are thoroughly heated after the removal of the gross mass. The heating iron is also passed slowly over the intercostal muscles.



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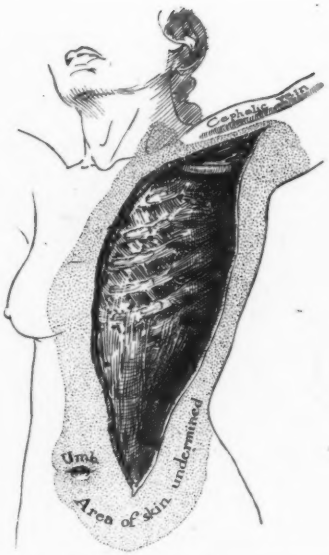

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The two remaining steps of the technic that are new refer to the post-operative care of the patient. If the arm on the operated side is kept closely approximated to the side of the head and the forearm turned over the top of the head and fastened there, the patient will obtain the maximum of comfort. I have experimented with many different forms of apparatus and methods to maintain this position of the arm, but have found none so satisfactory or efficient as the simple placing of a clove hitch aroun dthe wrist and tying the other end of the bandage around the opposite shoulder. As far as I know this position is original with this operation. It has many things to commend it.

(1) It is more comfortable than when the forearm is placed upon the chest, and the arm rigidly bound to the side of the thorax.

Fig. 8. The completed operation. The skin edges are hooked on to No. 14 copper wire (English standard), protected at intervals by sections of split rubber tubing, the arm is kept constantly over the head except when the wound is dressed. A rubber dam drain is placed below and at the back. The first dressing is made in three or four days and narrow rubber tissue strips are then applied across the wound at inch intervals. Dakin's or Eusoi solution is applied after the first dressing until granulations appear, then dichloramine-T is substituted. The arm is maintained in the position indicated by a "clove hitch" and fastened around the opposite shoulder by a rather ample or thick gauze bandage.

(2) Most important, it requires the natural reparative powers of the body to supply a sufficient amount of new skin to permit of the final maximum normal movements of the arm. It is comparatively easy to get the arm down after being in this position, if necessary, for weeks or months; but it is almost impossible, as you all know, to get it up if the healing process has occurred while the arm was down.

(3) The chances for the development of a lymphangitis and edema from cicatrical occlusion of the axillary vessels are greatly lessened. In fact, I have had no presentment of this condition in any case where this position has been strictly maintained until the wound was completely covered with new skin.

Fig. 9. This patient had previously been treated with cancer paste. Metastasis into the skin and axilla were extensive. Absolute fixation of breast. Maximum abduction of arm is shown. Œdema of forearm and hand.

Fig. 10. Same patient as in Figure 9. Arm overhead. Cautery dissection extending into opposite breast. The sternum, scapula, latissimus dorsi, upper half of external oblique, axillary vessels, and brachial plexus are all exposed. The ribs are partially denuded of periosteum. Absolute mobility of all structures forming the whole extent of the wound. This picture was taken at the time of the first dressing, 4 days after the operation. No pain or temperature at any time.

The fifth requirement in the after-treatment, following the extensive removal of supposedly infected cancer involved tissues, concerns the employment of active and vigorous movement of the edges of the wound circumference. The skin surrounding the area that has been removed should be pushed inward or toward the denuded space firmly and persistently at least once each day. Failure to do this permits of the development of pale, grayish looking, easily bleeding, infected and, therefore, unhealthy, granulations that will not cover with epithelium. But active, progressive, even forcible movement of the skin, as soon as the granulations are in evidence, encourages the development of a blood supply that initiates the growth of a new epithelial covering in a most remarkable way. With this there is a disappearance of the infected granulations. Curiously enough, the development of the new skin covering is not alone from the edges of the wound, but often it springs up after two or three weeks of this persistent manual movement of the skin edges ,all over the denuded and excavated space. At first it looks as if small, isolated patches of frost were appearing—with the difference that they are less white than frost. These changes when they begin to show, expand rapidly, and within 48 to 72 hours, there is no doubt as to what they are. But this epithelization never develops while the unhealthy, bleeding, secreting granulations, described above, still persist. These are always an unfailing evidence that the massage and

Fig. 11. Showing the movability of the new skin following an extensive cautery dissection in an advanced breast carcinoma, November, 1914. In this patient flaps were made for the upper part of the wound with the cautery and applied over the axilla. Movement of the arm was practically normal in a year following the operation.

movement of the normal skin surrounding the operated field has been insufficient to make the necessary healthy changes required for the progressive increases of the new skin. The phenomena here described, of the development of this skin covering, following this method of management, is so remarkable as almost, if not quite, to establish a new principle in the surgical healing of large wound surfaces. The skin that results from this procedure or treatment is more normal in appearance and, therefore, much more efficient than any that can be obtained by the so-called Thiersch grafts. The latter, when planted on these large areas of denuded surface, remain firmly attached to the underlying surfaces, and as such easily break down because too often they are too fragile to serve well as a normal skin covering. At each daily dressing of the wound, the whole arm is actively moved and massaged from the tips of the fingers to the shoulder. There is a remarkable absence of pain or temperature following this operation, either in the region involved in the treatment by the cautery knife or when the arm is moved at the wrist, elbow or shoulder. The administration of even a small dose of morphine is almost never required. It is true that it requires a longer time for one of these patients in the hosiptal than when the wound is covered by skin flaps at the primary operation. But you can always have the satisfaction of knowing that in your cautery wound you have left no active cancer cells for the production of a subsequent recurrence of the disease. More than this, if distant metastases have not already taken place, you can not fail to have a better final operative result than has so far been possible by any other method.

IS A DIAGNOSIS OF NEURASTHENIA EVER JUSTIFIABLE?*

DR. M. K. WYLDER, Albuquerque, N. M.

Neurasthenia is defined as a "disease without physical foundation." I sometimes feel that a man who makes a diagnosis of neurasthenia with great frequency should be put in a class with the doctor who, after examining a negro who was suffering from cancer of the pancreas and who was extremely emaciated, on being asked for his diagnosis, answered that this man was suffering from Cachexia Africano.

A careful study of the cases that have been diagnosed as neurasthenia will develop or bring out some of the underlying conditions that are causes of these so-called neurathenical symptoms. With your kind permission, I would like to give the important points of a few cases that have been called neurasthenia.

The first, a woman who had been overcome with heat while visiting in the East and, from that time, had lost strength but not weight; was unable to sit up for more than a hour without feeling exhaustion, headaches, nervousness, and stomach symptoms; could not see people without getting nervous and exhausted; frequently vomiting; suffered from heat in summer and cold in winter. Test meal showed contents normal; hemoglobin normal; blood count practically normal; Wassermann negative; urine often showed traces of albumin, at other times none, usually contained pus. On catheterizing, found right kidney normal, pus came from left. After a nephrectomy, she is leading practically a normal life.

Second case was a young man of 35, who came in saying he had lost his pep, was always tired; suffered with pains in back, especially on lying down; at times slept in a chair, rested poorly; had no appetite, was distressed after eating. He had taken a month's vacation before coming for treatment; returned from vacation feeling worse than when he left; was beginning to lose confidence in himself; had no abnormal temperature, at least when I saw him; Wassermann negative. On examination a slight nodule on left testicle which gave practically no tenderness on pressure; this nodule increased in size; at times he found his temperature 99 to 99.4. Being unable to find other cause for a run-down condition, testicle was examined and removed; was found to be tuberculous. His condition began to improve almost immediately. He is back at work, gaining both weight and strength and no longer feels he is neurasthenic.

A young man of 28 whose only complaint was that he couldn't apply himself; at least effort became exhausted, his legs gave out and he had to sit down, was beginning to worry over his condition. Several physicians had told him they could not find anything wrong with him and one had advised him to brace up and be a man, but had given him no bracer. Heart and blood pressure normal, also lungs and kidneys, no stomach symptoms, no headache, slept well but got up tired, Wassermann negative but remembering the old axium, "When in doubt, give iodides," he was put on vigorous anti-leutic treatment, neosalvarsan in the vein and potassium iodide by mouth, mercury instramuscularly. In one month he was working at his trade, that of a painter and again believes in himself. He has since told me that he had decided that if this last trial didn't help him he would suicide.

Another youth of 20 sent to New Mexico on account of tuberculosis, which he did not have; had lost no weight, was very nervous, had a rapid pulse, had lost strength, endurance and ambition, was brooding over his condition; he had been told to go into a sanatorium for nervous diseases, that he was a neurasthenic and he was beginning to believe it himself. His pulse was running 110 to 120, slight enlarge-

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ment of the thyroid; on close examination the tonsils were found to be diseased; he was advised, before attacking the thyroid, to have tonsils attended to and that this might be the underlying cause that was stimulating his thyroid; which proved to be the case. He returned to his home, East St. Louis, and has since written me that he is all right.

We all come in contact with such cases as these, especially of the young of the neurotic type. They are difficult, sometimes impossible, of diagnosis. They complain of long trains of symptoms chiefly mental and physical nervousness and weakness. They may be suffering from toxic thyroids, some of them are early cases of tuberculosis, others may be caused by tonsils or other focal infections, diseased gall-bladder; seldom the appendix, for the appendix is all too frequently attacked without being given his constitutional right of a fair and impartial trial but is convicted too frequently on hear-say testimony without a hearing.

Is there not then some physical cause for all these cases? And is it not possible that neurasthenia is not a disease, but a symptom,—the indication of a diseased body?

In many of these cases, however, after making as complete a search as I knew how to make, I have failed to find a physical defect to explain the condition. Just at present we are hoping for great things from the endocrines, but as Dr. Cushing so ably put it, up to the present the Cortezes and Pizarros are here but the real discoverers, the Balboas and Magellans have not arrived.

I believe, however, that all of us use the endocrines more or less, some surreptitiously, some openly, and some experimentally. In conclusion, permit me to say that it is my belief that if we will but study our cases, using all the means at our command, that the diagnosis of neurasthenia will be made with much less frequency and that I believe the diagnosis of neurasthenia is often an excuse for laziness and a cloak for ignorance.

THE PHENOL-PETROLATUM TREATMENT FOR TUBERCULOSIS

DR. S. S. WARREN, Mescalero Indian Reservation, Deming, N. M.

To quote from Fishberg: "We have no specific botanical, chemical or physical agent which, when administered to a consumptive, will exert a selective action on the tubercle bacilli, as mercury and salvarsan do on the spirochetae of syphilis, and quinine on the malarial parasite. Nor have we a therapeutic agent which will enhance the resistance of the tissues against the ravages of the sclerosis of the affected area."

Nature, however, has the power and demonstrates this power by curing probably ninety-five percent of all tubercle infections, for we have definitely proven by autopsy and other pathological studies that ninety-nine out of every hundred, born of woman, has, at some time, had a tubercle lesion.

Why, then, does nature withold from us her secret or—does she? As paradoxical as it may sound her secret is not a secret and has been known to us since Metchhnikoff gave us the theory of leukocytosis. Why has nature been so successful and we so impotent in our efforts to imitate her in this simple physiological phenomenon of bringing into action her innumerable forces of leucocytes the moment any pathological or foreign invasion interferes with the physiological phenomena of health? The moment that we introduce a serum, an antitoxin, a botanical, chemical or physical agent underneath the skin she resents it and within the time of a few heart beats she has her first line of defenses thrown around the needle prick and is following up every atom of foreign substance that we have thrown into her lymphat-

ics. If this be tuberculin you get a local, and a general febrile reaction; and if be a splinter you get a local reaction, and in time fever, if the splinter carries with it any infection. Why did the physicians and surgeons, in the old days, use a seton in lung fever—frequently with good results? Because they produced a local and general leucocytosis, the same phenomena that we get today when we use a serum or antitoxin.

Baldwin tells us that he can produce elevation of temperature, malaise, backache, nausea, etc., and even the local reaction by the injection of any foreign protein into a tuberculous person. Neither the local nor general reaction is absolutely specific. Cinnamic acid, cantharidin, pilocarpin and other alkaloids produce it, which is merely the registration of nature's protest against this imposition. In truth it is but a natural protest and not a response indicative of any pathological change due to a disease.

Why does nature make so many cures and fail to cure all? First: She makes her diagnosis days ,months and perhaps years before the faintest sign or symptom would be discernible or apparent to the cleverest diagnostician with all of his moden aids to diagnosis such as the microscope, x-ray and all of our methods of determining and detecting pathological changes. She does not wait, as does the patient, until the sputum is streaked with blood, for the fever, cough and those characteristic symptoms so familiar to us—to begin the fight. Every heart beat since the first focus of infection has thrown down the challenge of this invision she has been martialing and manouvering her armies of leucocytes for action at the point of infection, guard duty at every weak spot of her citadel and started her blood making organs conscripting and preparing for service her innumerable forces.

In ninety-five percent of these wars against invasion she has her victories and the clinician and physician are never appealed to.

Why does she lose the fight in the greater number of five percent, aided, as we attempt to aid her, by our knowledge of modern science and methods?

And there is another secret which she has been trying to tell us which many of us will not see or agree to until we have proven by experience and have the knowledge of results. I have long ago proven this to my own satisfaction and the results which I have obtained lead me to believe that you can do the same.

Years ago, as early as 1830, Reichenbach introduced and prescribed creosote. How many of you who have not at some time prescribed creosote and have noticed the almost immediate benefit and improvement of the patient? Fishberg says: "When administered in proper cases and in proper dosage, it improves the appetite, stimulates digestion and assimilation, improves nutrition, diminishes expectoration, removing at times its disagreeable odor and purulent character. All of which is sufficient of an encouragement to the average sufferer from phthisis to bestow confidence in the physician and to look forward to an ultimate recovery." And then the disappointment to patient and physician when its ill effects begin to show in gastric intolerance and albumen in the urine. Has any treatment ever given us the hopes and the disappointment as has creosote? Yet it is the open sesame and points the way to the greatest aid that we can give nature whereby she can cure the greatest number of that other five percent.

To what is the beneficial action of creosote ascribed? To its pwer to inhibit the growth and destroy in the gastro-intestinal tract the tubercle bacilli *which are inevitably swallowed by every consumptive.*

Here, then, is the reason why nature does not cure all pulmonary tuberculosis when there is sufficient resistance and reserve. Where this reserve is below normal we must bring it back to normal, which, after all, is merely a matter of proper hygiene and feeding. *Then we must keep the gastro-intestinal tract free from tubercle bacilli or else render them innocuous and impotent to reinfect or reinoculate.*

Nature does cure or hold in check the initial infection, but she becomes

exhausted in her fight against repeated infection and reinoculation from the constant and persistent, voluntary and involuntary, swallowing of tuberculous sputum and detritus that she must constantly eliminate.

When we are able to protect her absolutely against this source of reinfection and reinoculation she will reward us with a hundred percent of cures, if we see that she gets sufficient nourishment to rebuild her broken down tissues, because all cases that seek treatment sufficiently early will never reach the advanced and hopeless stage.

To control the swallowing of sputum is, as we all know, a hard task but an impressive explanation to the patient and an imperative command will, in a great measure, control it during the waking hours. This involuntary act while sleeping is beyond the control of the patient. This makes it imperative that we find and administer an intestinal antiseptic as potent as creosote and as harmless as water. There is no chemical, there is no drug that will meet this condition. But we can give nature this immunity and protection in one way by using that of which she has given us so generously, a mineral oil, (petroleum). It is a physical barrier only, but one which, when coating a living membrane, is impregnable to the passage of a microorganism or its toxin.

How do I know this? I know it from my own experience, having used it in my own case for twenty four years. I know it from the fact that mineral oil has an affinity for mucus or the mucus for the oil, so much so that every particle of tuberculous detritus passing along the alimentary tract will become enveloped in oil and thus rendered innocuous. I know it from the fact that a slide taken from the stool of a tuberculous enteritis will, upon microscopic examination, show this to be true. I maintain, therefore, that while the oil of petroleum is unique in the fact that it is mechanical in its action as an antiseptic it will give nature the one protection which she can not give herself, and which is so essential in aiding her in her cures.

In the year 1912, I suggested to the profession the hypodermatic use of a one per cent phenol-petrolatum in the treatment of pulmonary and glandular tuberculosis as I felt that my own experience with it warranted me in bringing it to the attention of others.

At that time I was not administering it by mouth, believing that the only aid which nature required, and calls upon us to give, was a spur or whip to a lagging and losing fight she was frequently called upon to make as the result of the exhaustion of her blood making organs in the advanced cases. I knew from my own experience with its use hypodermatically in daily doses of from one to two c.c. that I obtained and maintained a more persistent and uniform leucocytosis than with any serum or tuberculin I had ever used. And, instead of entailing a breaking down of the natural resistance as I had noted in the use of serums and tuberculin as evidenced by the clinical phenomena of malaise, chills and general exhaustion due to the reabsorption of toxins, there was little if any rise in temperature, no chill, no aggravation of the cough and no cold and clammy skin, but from day to day a steady progress towards a re-establishment of the normal functions of the organs of elimination.

There is a slight reddening and swelling at the point of infection which gives about as much discomfort as the bite of a mosquito. In the thousands of hypodermics that I have given, even in the most advanced and hopless cases, I have never had an ulceration or infection at the point of injection.

The question most frequently asked me by physicians and occasionally by the patient is: Will the carbolic acid injure the kidneys? My reply to this question, when asked by the physician was:

In giving diptheria anti-toxin to a little child did you ever consider how much phenol you were injecting? Do you not recall that in this anti-toxin, as in practically all biological products, there is a one-half percent phenol? You are injecting ten times as much into an infant or little child as I inject into an adult.. But this is not all;

phenol-petrolatum as prepared, and in order to hold the carbolic in suspension, must have added a small amount of a vegetable oil and for this purpose we use camphorated olive or cotton seed oil, the camphor completely neutralizing the acid.

But why do you phenolize you petrolatum? This question is frequently asked. For the reason that phenolized petrolatum will give a much higher and more persistent leucocytosis.

Can nature effect a cure in the more advanced cases if we aid her, and protect her from constant reinfection and reinoculation from and through the alimentary canal? In pulmonary tuberculosis, yes, provided, first, that there is no serious involvement of a tuberculous nature of the kidneys, spleen and peritoneum. Second, that no fatal hemorrhage intervenes resulting from gangrene or extensive loss of lung tissue. And finally, if the digestive organs continue to function to the point of furnishing her sufficient nourishment to repair broken down tissue, and to keep up the necessary preponderance of leucocytes. A cure in so far that the case is arrested and will so remain as long as a physiological equilibrium can be maintained.

As to the phenol-petrolatum treatment. What is phenol-petrolatum? As its name implies it is the phenolated mineral oil of petroleum in a half of one percent strength. While it has been prepared for me by two of the well know manufacturing chemists it is not a proprietary preparation. The word is not copyrighted and any chemist is at liberty to dispense it or any physician to use it. The acid is held in suspension by the addition of a small amount of a vegetable oil to which I prefer to add a little camphor. Camphorated olive or cotton seed oil acts very nicely. The dose hypodermatically is from one to two c. c. every second day over a period of six weeks to two months, then a period of rest for three weeks and a repetition of the treatment. I give the hypodermic in the back, subcutaneously, to either side of the spine where it is readily absorbed and taken up by the lymphatics. They give little if any pain but there is a slight soreness afterwards and it is my practice to use iodine at the point of injection altho there is no danger of an infection as phenol-petrolatum is an antiseptic, but the iodine relieves the soreness. Administration of the half percent by mouth should be three times a day and about half an ounce, preferably before eating. It is also well to give olive oil in conjunction for its food value. In fact, the more olive oil and white bread that the patient takes the better for him.

In regard to diet, let me insist here that I will not treat an advanced case of tuberculosis when the patient insists upon taking raw eggs or raw milk. If there is any combination that will produce more toxins in the alimentary canal than the gangrenous sputum swallowed by an advanced case of tuberculosis with raw eggs and milk in the alimentary tract, I am unable to imagine it.

As to the reason for the hypodermic use of phenol-petrolatum. It is not only conceded, but a proven fact that we do use serums and biological products with good results in acute infectious fevers where the race is to the swift, as in diphtheria, but here we do not parallel nature's way for we conquer by the extravagant expenditure of her reserve. While she is tolerant under these conditions she is intolerant when we attempt to use the same means to fight the slowly progressive, wasting diseases, as tuberculosis and cancer. For here she has the wisdom of infinite time in her knowledge and refuses to exhaust her blood making organs under the continuous prodding of any biological product and does so only under protest, which is apparent to us in the loss of a natural resistance against disease, best designated by the term, "inherited immunity."

Some years ago when the practice of giving typhoid and paratyphoid prophylaxis was so general, and even now so persistently followed in the army, navy and other branches of the service, and also followed to a lesser degree in g e n e r a l practice, I advanced the thought, and at times predicted, that this continuous practice with soldiers would so lower their natural or in-

herent immunity that nature had established against tuberculosis, that under the strain of active service and the exposure incident thereto we would find that many of these men would develop tuberculosis. This practice, to my mind, is unquestionably accountable for the large number of ex-service men having tuberculosis. Many of these men never got beyond the training camps where they had better food, more rigid sanitary and hygienic protection than they had ever enjoyed; and should have left the service enjoying a greater immunity from tuberculosis than any other class.

Phenol-petrolatum when introduced under the skin is taken up by the lymphatics. It is foreign to the system, no less than is a biological, botanical or chemical product and presumably nature handles it by the same methods and eliminates by the same channels, but here the parallel ceases. She does not protest its presence with fever and chills and general lassitude as she does a serum or anti-toxin. She does not register the therapeutic effect as she does from the administration of drugs, botanical and chemical. There is no stimulation or depression, no dilatation or contraction of the pupil nor any of the signs or symptoms so familiar to us when a drug is administered; and only through the aid of the microscope can we determine that she has taken the least notice of this interference.

The leucocyte count goes up; it stays up from day to day and they go into action, not against the artificial, biological stimulus from without but against the toxins from the ever breaking down of infected tissues. They are not called upon to fight serum and infection, which is the point I wish to make, and which I repeat. Nature will, and does, tolerate in an acute infection what she knows only too well will, if persisted in, mean exhaustion to a point of lowered resistance, below safety, against all infection and this she will not tolerate without making most strenuous protest.

Mineral oil is the one agent which she will tolerate day after day for the reason, I believe, that it does not break down one white blood cell and acts as a stimulus to bring her leucocytes into the superficial blood channels as well as to stimulate the spleen and bone marrow to speed up reproduction. Whether this explanation is correct or not, I believe you will agree with me that this phenomenon is essential for the cure of all wasting diseases.

A good and simple test to determine as to the value of phenol-petrolatum as a therapeutic agent is to give three injections, one daily, in acute coryza or winter cold. Give one c. c. in the arm as an ordinary hypo.

Any physician wishing to give phenol-petrolatum a trial who will write me I will be glad to furnish, gratis, a number of ampules.

Accident to Dr. M. K. Wylder—The many friends of Dr. Wylder, of Albuquerque, President of the Medical & Surgical Association of the Southwest, will regret to learn that he recently suffered a very painful and serious accident. While crossing a railroad track near that city, in making a call, his machine was entirely demolished and the doctor escaped death almost by a miracle. He was bruised from head to foot, had several severe scalp wounds, and one or two fractured ribs. At this time (May 1st), he is rapidly recovering, but has been confined to bed for several weeks.

Dr. Harry Carson Operated—Dr. Harry Carson, of Phoenix,, Secretary of the Medical & Surgical Association of the Southwest, is confined to the Hospital, in the city mentioned, having recently undergone the operation of nephrectomy for a tuberculous kidney. His many friends throughout Arizona and the Southwest generally, are hoping that his recovery will be attended by no more than the incidental delay. So far as could be determined at the time of operation, and since, the other kidney is organically and functionally sound and prognosis should be favorable.

ADVANCE IN THE DIAGNOSIS AND TREATMENT OF THE DISEASES OF THE BILLIARY TRACT*

By F. D. GARRETT, El Paso, Texas.

The diagnosis of diseases of the gall bladder, bile ducts, and liver is often difficult. In large clinics where many abdominal cases are operated upon daily, the percentage of tentative diagnoses of biliary disease is large.

The difficulty in the diagnosis of any disease is in direct proportion to the ease with which we can correlate history, symptoms, physical signs, and laboratory findings, with a mental picture which we retain of that disease.

A patient with a history of having typhoid twenty years ago, began to have indigestion, hyperacidity, and gastric flatulence two or three years later. Ten years later he had attacks of pain felt with the greatest intensity in the right hypochondrium and radiating to the back and right shoulder. At times the pain was of hypodermic severity. There were periods of jaundice. Such signs would mean, even to a tyro, a diseased gall bladder and, perhaps, stones.

Unfortunately, the history, the pain and its radiations, local tenderness and jaundice are not always present. One or all of these signs may be absent or, if present, they may be of such an unusual type as to mislead the elect.

That disease of the biliary tract is common, is witnessed by the frequency of operations dealing with these organs, and the yet larger number of unsuspected cases found post-mortem. I believe that in a very large percent of cases of biliary disease, the diseased area itself is silent. My own observations justify the conclusion that much chronic invalidism, including many cases of chronic myocarditis, high blood pressure, pancreatitis, and diabetes, result from infection of the biliary tract. As a source of focal infection it is probably second to none.

There is an early period in every disease in which gross anatomical changes have not taken place. If we would do the patient the greatest good, we must discover the disease before these changes occur.

Exploratory operations, especially those which do not expose the gall bladder to full view, are entirely inadequate to discover the beginnings of disease. Can a gloved hand, be it ever so practiced, discover an infection characterized, perhaps, only by swelling of the mucosa and increased production of leucocytes and mucus? Even the surgeon must admit that only advanced disease with stones or a contracted or distended gall bladder can be felt.

Our treatment of gall bladder disease has, in the past, dealt with the late, and not with the early, stages of the disease. In the case of our typhoid patient, it would have been better to have recognized and dealt with the primary typhoid or colon bacillus infection, and to have saved the patient from his prolonged digestive disturbance and from serious operation.

Let us briefly review some of the pertinent physiology and anatomy. The liver is a compound tubular gland. It is made up of myriads of small lobules, and each lobule of large polyhedral cells. Each lobule has an independent arterial and venous supply. The bile capillaries, that is the beginning of the bile ducts, run in minute grooves or canals between the tubules of the liver, from which they drain and empty the bile into the interlobular bile ducts. The contents of these interlobular ducts are collected into larger channels, which in turn carry the bile into the right and left hepatic ducts. These unite into a larger one and are joined by the cystic duct. Their union forms a larger or common bile duct which empties the bile into the very beginning of the intestinal tract.

It is of great importance that the terminal bile ducts and the gall bladder have, besides a lining coat of cylindrical and cuboidal epithelium, rather abundant large mucus glands. Their

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walls contain abundance of longitudinal and circular smooth muscle fibres.

At the terminal portion of the common duct, in that portion which runs obliquely between the coats of the doudenum, the unstriped muscle coat becomes augmented into a definite sphincter, which Oddi described, and which controls the expulsion of bile into the intestine. The gall bladder also has an elastic coat which is capable of active dilatation and contraction.

Sensory fibres, capable of causing reflex contraction and dilatation, are found both in the vagus and splanchnic nerves.

The gall bladder seems, under normal conditions, to act not only as a storage reservoir for bile during periods when the digestion is not active, but, as shown recently by Rous and McMaster, it absorbs and condenses the liquid from the bile.

It is known that gastric chyme laden with albumoses and peptones, on arriving in the duodenum, causes relaxation of the common duct sphincter and a flow of bile. The products of carbohydrate digestion do not stimulate the bile flow.

Venous blood when brought to the liver has been shown by Adami to be rich in living bacteria. It is one of the important functions of the liver to destroy or eliminate these bacteria. However, under normal conditions, the bile may contain living organisms.

There are two important factors in preventing infection of the biliary system, even though the bile contain living pathogenic micro-organisms. One is the maintenance of normal vitality in the mucous membranes of the gall bladder and bile ducts. Micro-organisms prefer to settle and grow on tissues which have lost their resistance. The other safeguarding factor is the presence of abnormally prolonged stasis of bile in various parts of the biliary system. Of these two factors, the writer believes stasis to be the most important.

Too long intervals between meals and a diet making very irregular demands upon the bile flow would favor stasis. A sedentary occupation, from the attendant lack of exercise, leads to an accumulation of fat about the abdomen and favors stasis.

Another very important cause of stasis may be due to spastic closure of the sphincter of the common duct. This undoubtedly occurs and may be due to lost balance between the vagus and sympathetic, as in some cases of pylorospasm.

In 1916 Melczer, of the Rockefeller Institute, read a paper on "The Disturbance of the Law of Contrary Innervation as a Pathogenic Factor in Diseases of the Bile Ducts and Gall Bladder." On the basis of experimental work done by him, he recorded in a footnote the following: "I have observed that the local application of a 25% solution of magnesium sulphate upon the mucosa causes a completely local reaction of the intestinal wall. It does not exert such an effect when the salt is administered by mouth, that is, when it has to pass through the stomach before reaching the intestine. The duodenal tube has, however, reached an efficient and practical stage." Continuing, he makes the suggestion "to test, in jaundice and biliary colic, a local application of a 25% solution of magnesium sulphate by means of the duodenal tube." "It may," he says, "relax the sphincter of the common duct and permit the ejection and even removal of a calculus of moderate size wedged in the common duct in front of the papilla of Vater."

Acting upon Melczer's suggestion, in 1916, I treated a case of chronic jaundice of some months standing, by the injection of a 25% solution of magnesium sulphate into the duodenum at intervals, over some time. And though my technic was poor as compared with that in present use, the result was encouraging.

My interest in the work has since been greatly increased by the work of Lyons of Philadelphia. He has done much to put it upon good footing, and we owe to him much of the technic.

After the patient swallows the tube into an empty stomach, a little warm 2% solution of sodium bicarbonate is injected and he is instructed to lie in a right lateral semi-prone position. He is now encouraged to swallow the tube very slowly, to a distance sufficient to

enter the duodenum, and pass some three or four inches below the pylorus. We try to make sure that we are in the duodenum (1) by the change of color of the aspirated fluid which, in most cases, is tinged with yellow; (2) by the change in consistency of the fluid withdrawn, the duodenal fluid being thicker and flowing like thin molasses instead of dropping like water. In case the sphincter of Oddi is closed (and Lyons says that is the normal state when the stomach is empty), we can sometimes still cause a little bile to be expelled by causing the patient to sit up for a moment and then lie down, or sometimes the injection of a little warm normal salt solution may start a flow. After some experience it is usually possible to know when the tube has been placed correctly without having a showing of bile.

Now, upon injection of a 25% solution of magnesium sulphate there follows, under normal conditions, in from three to twenty minutes, a flow of light yellow bile, and this soon changes to a darker yellow color and lower viscosity. The first bile we call, for convenience, after Lyon, "A" bile, the second "B", and the third "C" bile.

With an experience of several hundred duodenal taps, we think that A bile comes mostly from the bile ducts; that B bile comes mostly from the gall bladder; and that C bile comes from the liver. It seems only necessary to prove that B bile comes from the gall bladder. This can be done by comparing the bile removed by medical drainage with that obtained from the gall bladder after it has been removed by operation. Other observers, as well as myself, have found by comparison that the two specimens are identical.

Freshly secreted bile is thin, light yellow, and sometimes greenish in color from oxidation of bilirubin to biliverdin. Bile from the gall bladder is recognized by contrast with the first part of the flow, and is distinctly darker, varying from yellow to dark mahogany.

Just as we get information from examination of the urine, so can we get help from examination of the bile.

(1) The presence of bacteria. By careful cleansing of the mouth before swallowing the tube, and the stomach after swallowing it, and by using care to avoid contamination of the fluid during and after aspiration, we are able to determine the type of the invading bacteria.

(2) The presence of mucus, in excess. A marked increase in the amount of mucus in B bile denotes irritation or inflammation of the gall bladder or ducts.

(3) The presence of excessive numbers of leucocytes and epithelial cells. Cholecystitis, with or without stones, is denoted by the presence of numerous leucocytes, excessive numbers of typical epithelial cells and increase of mucus. The presence of a large number of leucocytes in the bile denotes a severe infection.

(4) An inorganic sediment. In one case suffering from severe attacks of biliary colic, I found the bile loaded with long sharp crystals. I have also drained away pinhead size concretions, gritty to feel, and of amorphous structure microscopically.

Admitting that the gall bladder can be drained without surgery what types of cases are suited to this kind of treatment? My own experience would lead me to advise medical drainage as of value in the following conditions:

(a) In carrier cases of typhoid or colon bacillus infection. This method, if used early and properly may prevent the development, in such cases, of serious disease.

(b) Gall bladder disease following soon after any acute infectious disease, as influenza, tonsilitis, pneumonia, etc.

(c) In chronic recurring bilious attacks, characterized by nausea, acoria, vomiting, and sometimes migraine.

(d) In cases of chronic jaundice not clearly due to obstruction of the common duct by stone, nor to hepatic cirrhosis, and not accompanied by serious infection of the biliary tract. In Weil's disease.

(e) Following the operation of cholecystotomy there are many cases which fail to get relief. Lyons and others have been able to obtain positive cultures from bile from the gall bladders

of such cases after the drainage fistula had closed. In these cases where symptoms had returned soon after operation, medical drainage over a considerable period of time, along with autogenous vaccines, gave relief.

(f) In cases of mild cholecystitis or choledochitis.

CASE REPORTS

Mrs. H. Aged 55. A chronic invalid from pulmonary tuberculosis. She suffered from obstinate constipation, and had had several attacks of what was thought at first to be intestinal paresis with distention of the abdomen and great pain. About April first she commenced suffering again with severe pain and distention of the abdomen. This was thought by the attending physicians, including myself, at first, to be due to obstipation. However, certain radiations of the pain made me suspicious, and I advised medical drainage for diagnosis. We found increased mucus and turbidity in B bile, and many small flakes made up of leucocytes and epithelial cells from the gall bladder. A bacteriological examination made at that time showed pure culture of staphylococcus aureus. We drain the gall bladder three times following this, at intervals of about three days and each time the findings were substantially the same. Drainage had to be omitted for a week. About this time the patient had a chill and a sharp rise of temperature. Because the patient and her family wished to avoid an operation, and her regular attending physicians did not consider her a good risk, we drained the gall bladder again by medical means. The number of leucocytes found in B bile was now greatly increased. A cholecstectomy was done at this time. The gall bladder contained a few stones and bile containing much pus, identical with the bile drained away prior to operation.

Mr. L. Age 32. Past history negative except that at the age of 12 he had an attack of severe dysentery. Following that he was jaundiced. He said that during the past 20 years he could not remember to have been free from jaundice. He complained of indigestion but had no definite attacks of pain. General physical examination, including stomach contents, stool and urine examinations, were negative except for the icterus, and a low gastric acidity. Drainage was advised and was carried out without difficulty. More than 150 c. c. (normal 30 to 90 c. c.) of dark thick gall bladder bile was drained away. There was increase of mucus, but only scattering leucocytes and epithelial cells. Bacterial examination of B bile showed bacillus pyocyaneus in pure culture. This patient was under treatment for three weeks and was free from jaundice after the third or fourth day following the first drainage.

Drainage is always followed by 200 to 300 c. c. of hot Ringer's solution containing one-half drachm of sodium sulphate by the Murphy drip. We are giving this patient an autogenous vaccine prepared from his B bile. We think that this patient has had a mild chronic infection and atony of the gall bladder, and hope that, if his treatment can be kept up for two or three months, his relief will be permanent.

CONCLUSIONS

(1) The gall bladder can be drained by non-surgical means in the cases having some tolerance for the tube, and without obstruction at the pylorus. Some other possible causes for failure are indicated in this paper.

(2) The method is of value in differential diagnosis.

(3) Non-surgical biliary drainage can be made a valuable aid in treatment.

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Lyon, Am. Journal of Medical Science, Oct., 1920.

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PACIFIC COAST ASSOCIATION OF ANESTHETISTS

The Pacific Coast Association of Anesthetists will hold its first Scientific Meeting at Yosemite, Yosemite Park, Monday and Tuesday, May 15-16, 1922, in conjunction with the meeting of the Section on Anesthesiology of the California State Medical Society.

Membership in the Pacific Coast Association of Anesthetists is open to all licensed and qualified members of the medical and dental professions, as well as to research workers holding doctorates of similar standing, who are interested in advancing the specialty of anesthesia.

Send for and fill in the details of a membership application and return it with your check or money order for the annual dues ($5) so that your Membership Card may be sent you in advance of the meeting. Also be sure and send the names and addresses of as many prospects for membership as you know of.

For further information, address, Eleanor Seymour, M. D., Sec'y-Treas., 1329 South Grand Avenue, Los Angeles, California.

Southwestern Medicine

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Information of interest to all readers, together with directory of officers of the constituent societies and the Board of Managers of this magazine, will be found following the Table of Contents on pages 1 and 2 of the Advertising Section.

Editorial Staff

DR. KELVIN D. LYNCH, Mills Building, El Paso, Texas ..... Editor in Chief.
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DR. J. W. ELDER, Albuquerque, New Mexico ..... Associate Editor
DR. W. WARNER WATKINS, Box 1328, Phoenix, Arizona ..... Managing Editor

ARIZONA STATE MEDICAL ASSOCIATION MEETING

Prescott and Jerome, June 14th and 15th.

The Thirty First Annual Meeting of the Arizona State Medical Association will be held in Prescott, on June 14th and 15th. Prescott is the county seat of Yavapai County, the other chief city being Jerome. It is in the northern part of the state, and is conveniently reached over the Santa Fe main line from northern Arizona and New Mexico, over the Santa Fe short line from Los Angeles, changing at Wickenburg, or over the Southern Pacific and Arizona Eastern through Phoenix, for southern Arizona and southern California.

Several special features of the meeting have been arranged, notable among which are the following:

Through the courtesy of the Commanding Officer at U. S. Veterans' Hospital No. 50, Whipple Barracks, and his staff, clinics will be held at this hospital on the mornings of June 14 and 15. Opportunity will be given all members of the Association to see the work of this hospital, in x-ray, clinical examinations and treatment, including artificial pneumo-thorax and heliotherapy.

After lunch on June 15th, members of the Association will be taken by auto to Jerome, 30 miles distant, over one of the finest roads in the state. Through the courtesy of the Chief Surgeon and the management of the United Verde Mine, members will be taken to the 1000-foot level where a contest will be held between First Aid Teams of the United Verde and the United Verde Extension Mining Companies. The details of this contest will be arranged by a committee of the Medical Association who will act as judges and make awards. Several papers will probably be read before the Association in the mine. The remaining sessions of the Association will be held in Jerome that afternoon and evening.

The Yavapai County Medical Society and the Commanding Officer at Whipple Barracks, and his staff are arranging a full program of entertainment for the visiting physicians and their ladies. A dinner-dance will be given at the Yavapai Club, Prescott, on the evening of the 14th, and a dinner-smoker will be held in Jerome on the evening of June 15th. A ladies' committee will look after the comfort and entertainment of visiting ladies during their stay in Prescott and Jerome.

An excursion to the Grand Canyon will be arranged for June 16th, and following days, if a sufficient number signify a desire to take this trip.

MEMBERSHIP IN THE NEW MEXICO MEDICAL SOCIETY

Under the plan of organization which is operating in New Mexico, no doctor in that state can show a legitimate excuse for not being a member of the state organization—if he is a legitimate and ethical practitioner.

In the counties where there are county societies, every doctor should be a member, because such membership means that he has the stamp of approval of his fellow practitioners, that he has their good will, and that he is willink to join with his confreres in upholding the ideals of medical practice and building up the influence of medical men in the social fabric. If a man is not a member of the county organization, it means only one of two things: (1) he is not interested in these vital things and his medical ideals are purely selfish, or (2) he is not professionally eligible to associate with ethical practitioners. There are very few such in New Mexico.

However, New Mexico DOES contain the highest percentage of doctors of any state in the Union who are not members of the State Medical Society, these non-members being almost entirely in counties where no county medical society exists. But it is not necessary, in New Mexico, for a doctor to be a member of a county society in order to hold state membership. If no county society exists in YOUR county, doctor, you can become a member of the State Society and through it, if you desire, of the American Medical Aassociation, by making application direct to the State Secretary, Dr. J. W. Elder, Albuquerque, N. M., remitting the state dues of $3.00.

Such state membership carries several direct advantages: (1) it entitles you to receive the official publication of the Society — SOUTHWESTERN MEDICINE; (2) it carries with it eligibility to fellowship in the American Medical Association; (3) it establishes your status as a recognized ethical practitioner, for the information of life insurance companies, etc., when they are seeking representatives; (4) if you expect to remain permanently in New Mexico, it enables you to take your place in the medical councils of the leading practitioners of the state; (5) should you leave the state and locate elsewhere, a transfer card from the State Society will give you standing and recognition anywhere in the United States.

New Mexico is one of the few states which will permit such membership, and no doctor living in isolated communities can afford to overlook the advantages of such State Society affiliation.

THE NEW MEXICO MEDICAL SOCIETY MEETING

The fortieth annual meeting of the New Mexico Medical Society was entertained by the McKinley County Medical Society, at Gallup, on April 28th and 29th. This Society furnished arrangements which might well be the envy of metropolitan meetings. The meeting place was the Congregational Church, which is arranged so that it can be darkened, and is equipped with an excellent moving picture machine and a powerful lantern slide machine. Both were used in the papers, the pastor of the Church acting as machine operator.

The entire City of Gallup joined in making the meeting a success, the court reporter being loaned to the meeting for taking discussions, and the civic organizations joining in social entertainments of the visitors and members.

General Brown, of the state militia. escorted a party of visitors to the Zuni Indian Reservation, his intimate knowledge of Indian legendry making the trip a rare treat for the doctors.

When the visitors overflowed the hotel "El Navajo," they were entertained in the homes of the local members.

More details of the social entertainments are given in the following detailed record of the session:

The fortieth annual meeting of the New Mexico Medical Society was held in Gallup, on April 28th and 29th, and was a successful meeting from every standpoint. The registration at the meeting included the following:

W. B. Cantrell, Gallup.
C. Russell, Astesia.
Warner Watkins, Phoenix.
J. G. Holmes, Alamagordo.
J. D. Mulder, Reheboth.
Nelson W. Janney, Los Angeles.
J. W. Elder, Albuquerque.
Hugh Muliarky, Tohachi.
S. D. Swope, Deming.
J. R. Van Atta, Albuquerque.
J. H. Boyle, Gallup.
A. R. Hatcher, Wellington, Kans.
Robt. Werndorff, Wellington, Kans.
Polk Richards, Ft. Defiance, Ariz.
G. S. McLandress, Albuquerque.
Geo. Piness, Los Angeles.
Arthur DeLong, Gallup.
J. W. Stofer, Gallup.
H. G. Wilson, Gallup.
T. E. Pressley, Roswell.
H. A. Miller, Clovis.
E. C. Prentiss, El Paso.
G. K. Angle, Albuquerque.
Crum Epler, Pueblo, Colorado.
Rex Duncan, Los Angeles.
J. W. Hannett, Gallup.
P. G. Cornish, Jr., Albuquerque.
G. H. Luckett, Santa Fe.
C. H. Clark, Gallup.
C. A. Mozley, Breece.
E. W. Phillips, Phoenix.
Titian Coffey, Los Angeles.
E. A. Dodson, Gallup.
H. T. Watson, McGaffy.

The session opened at 10 a. m., Friday forenoon, in the Congregational Church, the President, Dr. C. Russell, of Artesia, presiding. Rev. Louis A. Stark gave the invocation, and the address of welcome was delivered by the Mayor of Gallup, A. T. Hannett. Dr. J. W. Hannett, the president of the McKinley County Society responded on behalf of the entertaining Society, and Dr. S. D. Swope, of Deming, responded on behalf of the State Society.

Dr. J. W. Stofer, of Gallup, was then requested to escort to the chair and introduce the incoming President, Dr. H. A. Miller, of Clovis. Dr. Miller's presidential address will be found in this issue of SOUTHWESTERN MEDICINE.

A telegram from Dr. McBride, whose paper was next on the program, was read, in which he expressed his regrets at being unable to attend the meeting. The paper of Dr. Rex Duncan, of Los Angeles, on "Recent Developments in Radio-Therapy," was given at this time. This paper gave the latest report on the developments in short wave length or high voltage x-ray therapy in the treatment of cancers. It was discussed by Drs. Watkins, Mulder, Prentiss, Hannett, Epler, and closed by Dr. Duncan.

Following this paper, the Society adjourned to become the guests of the Kiwanis Club of Gallup at luncheon at El Navajo Hotel. This Club served an elegant banquent, supplemented by a Jazz Band and a troupe of jubilee singers from the Chatauqua, which was showing at Gallup, at the time. This with several short speeches made a very welcome diversion for the scientific meeting.

The House of Delegates met at 1:30 and received a report from Dr. Watkins, Managing Editor of SOUTHWESTERN MEDICINE on the new plans and arrangements for publishing the journal and on the support which it was desired that each constituent society should give the journal, which is the official organ of the Society.

The Scientific Session convened at 2 p. m., the first paper of the program being a talk by Dr. W. W. Waite, of El Paso, on "Waste Products and Their Elimination." This was discussed by Drs. Lynch, Hannett, Angle, Swope, Luckett, Prentiss, the discussion being closed by Dr. Waite.

The second paper was by Dr. Nelson W. Janney, of Los Angeles, on "The Dietetic Management of Complications of Diabetes, Including Surgical." This gave a very graphic and well illustrated idea of the present situation with regard to the treatment of diabetes and what can be accomplished by scientific handling of these cases. It was discussed by Drs. Mulder, Waite, Swope and Watkins, the discussion being closed by Dr. Janney.

The next paper was by Dr. G. H. Luckett, State Health Commissioner of New Mexico, on "State Medicine." This aroused considerable discussion, joined by in Drs. Lynch, Waite, Epler, Duncan, Watkins, Hatcher, Angle and Swope, closed by Dr. Luckett.

The scientific session was adjourned at this point until 7:30 p. m.

The first paper at the evening session was by Dr. J. D. Mulder, of Reheboth, on "Trachoma." It was discussed by Drs. Richards, Luckett, Waite, Presley, Angle, and closed by Dr. Mulder.

The second paper of the evening was a special paper, by Dr. A. R. Hatcher, of Wellington, Kans., on "Prostatic Surgery and Some of Its Problems." It was discussed at some length by Dr. Lynch and by Dr. Duncan, Dr. Hatcher closing.

Following the evening session, the Society was entertained at a smoker and boxing exhibition, at the City Club, under the auspices of the American Legion. Most of the boxers were members of the National Guard, two detachments of which were stationed at Gallup.

On Saturday forenoon, the meeting was called to order, at 9:30, by President Miller, the first paper being by Dr. Crum Epler, of Pueblo, Colorado, on "The Operation of Election in Cholecystitis." The argument of the paper was in favor of surgical treatment of gall-bladder disease, by removal of the gall-bladder. It was discussed by Drs. Cornish, Hannett, Lynch, Hatcher, and closed by Dr. Epler.

The second paper of the morning was by Dr. E. C. Prentiss, of El Paso, on "Oxygen and Light in Their Relation to the Incidence and Growth of Cancer." It was discussed by Drs. Watkins and Waite, Dr. Prentiss closing.

The last paper of the morning was by Dr. Geo. Piness of Los Angeles, on "Present Aspects of the Etiology and Treatment of Bronchial Asthma." It was discussed by Dr. E. W. Phillips, of Phoenix, and the discussion was interrupted for luncheon.

The luncheon was served by the Sisters at the Hospital, and was a real banquet, both in abundance and in the spirit of the social diversion.

In the afternoon, convening at 2 o'clock, the discussion of Dr. Piness's paper was resumed, Drs. Hannett, Swope and Watkins participating and Dr. Piness closing.

At this point, the report to the general session, of the House of Delegates was made by Dr. Elder.

The resolutions introduced by Dr. Swope the previous day relative to the support to be given the official journal, were announced as having been accepted by the Council.

The following officers were elected for the coming year:

President—Dr. H. A. Miller, Clovis.

President-Elect—G. S. McLandress, Albuquerque.

Vice-Presidents—J. G. Holmes, Alamagordo; S. L. Wilkinson, Belin; T. E. Pressley, Roswell.

Secretary-Treasurer and Associate Editor—J. W. Elder, Albuquerque.

Delegate to A. M. A.—H. A. Miller, Clovis.

Alternate—W. B. Cantrell, Gallup.

Council for One Year—C. S. Losey, East Las Vegas; G. S. Luckett, Santa Fe.

Council for Two Years—H. V. Fall, Roswell; J. B. Westerfield, Clovis.

Council for Three Years—S. D. Swope, Deming; P. G. Cornish, Sr., Albuquerque.

The next annual meeting will be in Albuquerque, the time to be decided by the President, the Secretary and the local society, except that it must be held before the American Medical Association meeting.

The next feature of the program was a moving picture of syphilis, loaned by the Public Health Department, as a part of the Government's campaign against venereal disease. Reel 1 showed the methods of diagnosing the primary and secondary stages, illustrating various lesions, the examination for spirochetes and the Wassermann Test. Reel 2 showed illustrations of tertiary lesions and neurological cases. Reel 3 showed the methods of treatment by arsphenamine and mercury injections and educational methods. The discussion on the films was given by Dr. K. D. Lynch, of El Paso.

Following the films, Dr. Werndorff, of Wellington, Kans., gave an illustrated talk on "Tuberculosis of the Hip," the lantern slides being very excellent reproductions of anatomical features and pathological conditions in this disease.

The next paper was on "Chronic and Subacute Appendix Disease," by Dr. W. Warner Watkins, of Phoenix, Arizona, illustrated by lantern slides of radiographs showing various types of these conditions. It was discussed by Drs. Prentiss, Cornish, Mulder and closed by Dr. Watkins.

The last paper of the scientific program was by Dr. Titian Coffey, of Los Angeles, on "Repair of Cervix Nine Days After Delivery," illustrated by several lantern slides showing conditions at time of operation and several weeks later. The theme of this paper was to delay repair of cervical tears until the cervix had returned to normal, but to make the repair before allowing the patient on her feet; in other words, on the ninth day. The paper was discussed by Dr. Swope, Dr. Coffey closing.

The Resolutions Committee presented their report, to the effect that the cordial thanks of the Society be extended to the McKinley County Society, the Kiwanis Club, the Sisters at the Hospital, the American Legion, the Congregational Church and its Pastor, Rev. Stark for his assistance in loaning and operation of the moving picture machine and lantern slide machine for the illustrated papers.

The meeting closed with a banquet at El Navajo and a reception and dance at the City Club. Dr. S. D. Swope presided at the banquet as Toastmaster and the following responded to toasts: Drs. Willson, Mullarky, Dodson, Elder, Duncan, McLandress, Cornish, General Brown, Mulder and Watkins. Following the banquet adjournment was taken to the City Club for the dance.

EL PASO COUNTY MEDICAL SOCIETY

The El Paso County Medical Society met in regular session on Monday, March 20, 1922, with 67 members and visitors present.

Drs. R. B. Homan and W. R. Smith reported and demonstrated a case, a woman, age 38, who had been sent from post to post on account of asthma. An x-ray examination made here showed a lemon size aneurism of the arch of the aorta. Two years ago before the onset of the asthmatic symptoms a Wassermann was made in another section of the country but the result was not communicated to the patient. Recent advice from that physician indicated that at that time the reaction was positive but no anti-syphilitic treatment had ever been given. The case, in addition to the asthmatic attacks, showed a typical bruit over the aorta, a classical tracheal tug and demonstrable widening of the aortic dullness. Dr. Homan reiterated a statement previously made several times before the society that all

asthmatic patients should be fluoroscoped. He also stated that the results of Wassermann examinations should be given to patients, for in this case the present distressing condition could probably have been avoided.

Dr. H. Crouse reported and demonstrated a case of a woman, age 35, whose chief symptoms were those usually found in postero-lateral sclerosis except the Babinski sign which was negative. The blood and spinal fluid showed negative Wassermann reaction, globulin was negative, mastic test negative and the spinal cell count was three. The general spastic condition was marked, particularly when the thigh was flexed on the abdomen and the leg on the thigh. There was an odd staring of the eyes but the thyroid was negative. The general physical findings outside of the above were negative except that the mouth was in a frightful condition with virulent form of so-called trench disease. Sterilization of the mouth and competent dental care, coupled with Burhan's soluble iodine, had given marked improvement. The case was shown because of its simulating in same ways postero-lateral sclerosis of Charcot and Erb.

Drs. Leigh and W. L. Brown demonstrated a specimen of an intessusception removed from a baby twelve weeks old who had presented an unusual history in that there had been no vomiting or diarrhea and no tumor had ever been demonstrable. When the case was first seen on Friday night, March 17th, there had been no bowel movement for several hours, the abdomen was distended, the temperature was elevated and the patient was in a state of deep shock. Peristaltic waves could be demonstrated and a little bloody material was found in the rectum. Operation was at once undertaken and a Meckel's diverticulum was found which had become inverted into the ileum carrying the bowel with it, about fifteen inches being involved. The patient's condition was grave and all that could be done was a reduction of the intussusception with amputation of the diverticulum. The bowel was in fair condition but there was but little improvement in the condition. The next day the temperature was very high, the bowels had not moved, the distention increased and death resulted. Post-morten examination showed that the bowel had not recovered.

Dr. K. D. Lynch reported a case of a woman who, for some time past, had keen taking "spinal adjustments" from a local chiropractor. The chief complaint was pain over the right kidney radiating to the thigh. Examination disclosed a hydronephrosis with obstruction low in the ureter caused by pressure of a tumor mass the size of a large grape-fruit in the upper part of the pelvis. Dr. Lynch felt certain that the tumor was a retro-peritoneal sarcoma and he seriously doubted the ability of a chiropractor to locate dislocated vertebrae when his tactile sense was not acute enough to feel a tumor the size of a grapefruit.

Dr. Lynch reported another case, one of cerebro-spinal syphilis, with constant severe headaches. There was partial atrophy of both optic nevres and the blood and spinal fluid showed positive Wassermann reactions. This case had also been under the care of the same chiropractor and had been told by him that the trouble was due to dislocation of the bones at the base of the skull, the headaches being due to pressure on the optic nerves.

Dr. Hugh Crouse gave a resume, in a motion picture sense, covering many different types of neurological cases. Included were illustrations of the different neurological tests covering the deep and superficial reflexes, the various steps of different methods of tapping the spine, and securing the fluids, Landon manometric readings, the method of securing the Swift-Ellis blood, the injection ofByrne's mercurialized serum and the laboratory technic of the Wassermann test, etc. A case of Duchene-Aran-Ledinski progressive muscular atrophy was shown in detail; cases of transverse myelitis, hydromyelia of the cord, exostosis with pressure on the cauda equina were shown as were cases of tumors of the pituitary gland, manifesting themselves as early and late acromegaly. Patients demonstrating the various gaits, spastic, tabetic and hemiplegic, etc., were also shown. A demonstration of an Elsberg laminectomy, the operation being performed on a cadaver, was included in the film.

The talk that followed the pictures covered in a skeleton sense, the insiduous and persistent nature of cerebro-spinal syphilis, the eye tests were touched upon, the Caloric and Barany tests were advocated for simicircular manifestations of early syphilis instead of the bone and air conduction tests heretofore used, the latter being subjective and, as such, to be avoided in accurate diagnostic work.

The talk included a report on a series of twelve cases touching upon the economic and soul affections of central nervous system syphilis. The treatment as described covered the 100 c. c. of 15% salt intravenous administrations by Corbus, being the work of Fisher and popularized by Cushing, Null's spinal drainage, Byrne's mercurialized serum, the Swift-Ellis treatment with and without the addition of Ogilvie's 1/50 grain of mercury.

The speaker stated that his observations in the series had been 20 per cent cures, 30 per cent improvements, 10 per cent made worse and 40 per cent no changes. The manifestations of ill results were paralysis of sphincters of rectum and bladder, parasthetic and anaesthetic zones.

Discussed by Drs. G. Werley, H. H. Stark, K. D. Lynch, Bessie Sweet Werley, G. Turner, J. M. Britton, S. A. Schuster, Major Scott and Major Madigan.

Dr. W. W. Waite followed Dr. Crouse's talk with a description of the various laboratory tests done on spinal fluid and laid stress on the taking of spinal pressure and examination of the spinal fluid in all suspicious cases.

(Continued on page 222)

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Medical Director

(Continued from page 220)

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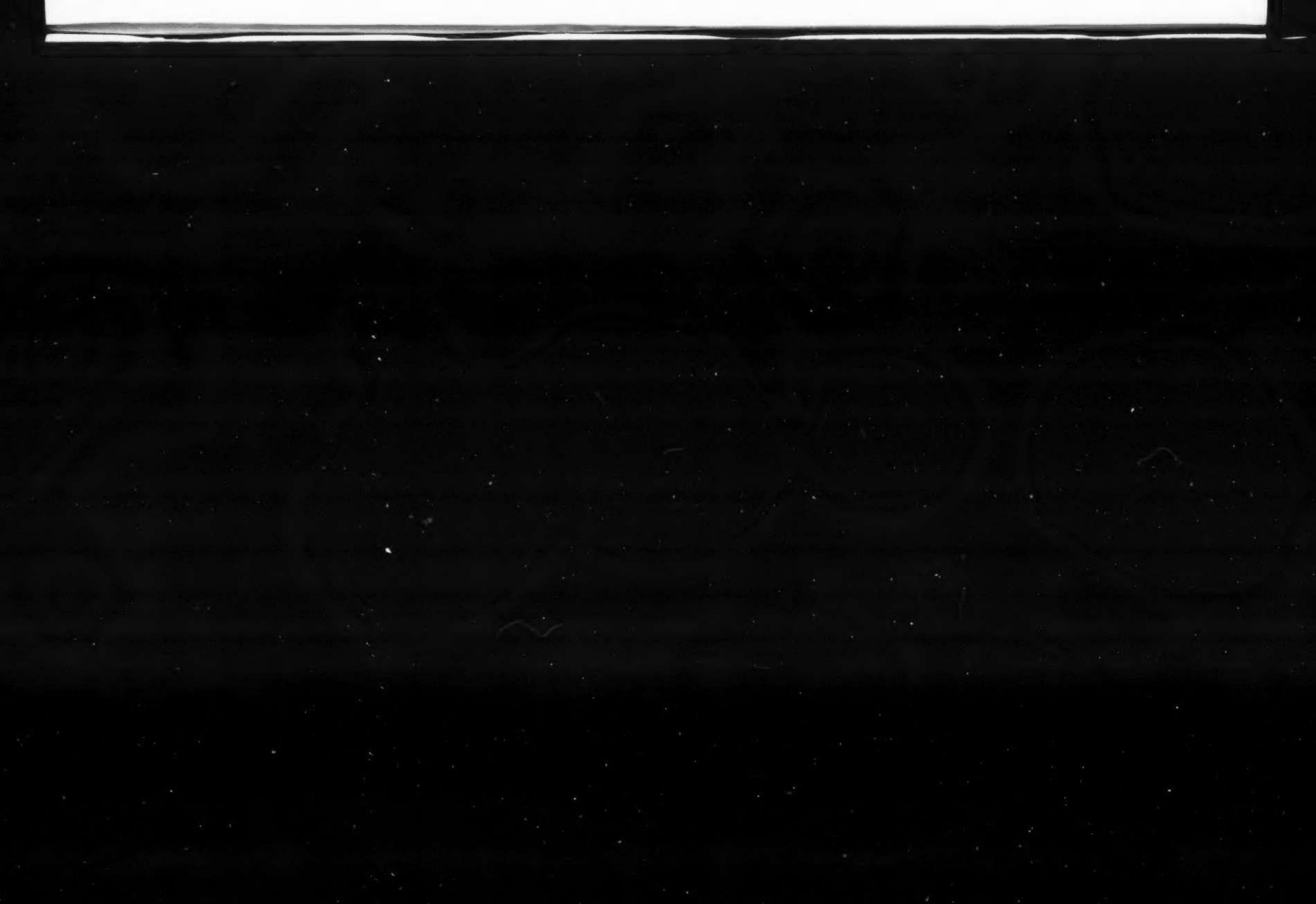

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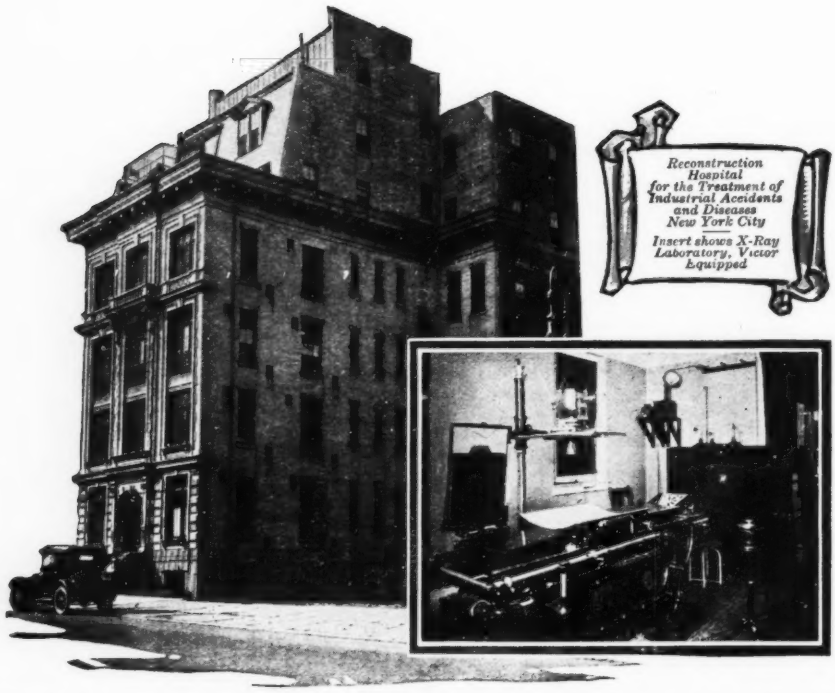

Reconstruction Hospital for the Treatment of Industrial Accidents and Diseases New York City

Insert shows X-Ray Laboratory, Victor Equipped

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VICTOR

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